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Explanation Paradigms: Their Application Potential in the Field of Tennis Instruction

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EXPLANATION PARADIGMS: THEIR APPLICATION POTENTIAL
IN THE FIELD OF TENNIS INSTRUCTION

by

Dennis Watanabe

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of Loyola University of Chicago in Partial Fulfillment
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PREFACE

There are those in the field of philosophy who argue that it is an autonomous, mutually exclusive discipline with a certain subject matter and its own methods of inquiry and analysis--contentions which are denied by other modern philosophers. There is also a debate over whether philosophy is an "applied" or "pure" discipline. It is possible to study philosophy without regard to its pragmatic considerations, just as it is possible to study the physical sciences as pure, theoretical subjects independent of their utilitarian aspects. However, this dissertation will focus on the "applied" ramifications of philosophy. More specifically, we will show how the tools of philosophy can be applied to a particular educational enterprise--the field of tennis instruction.

VITA

The author, Dennis Watanabe, is the son of Koji Watanabe and Masai (Hoshi) Watanabe. He was born May 10, 1943, in Manzanar, California.

His elementary and secondary education was obtained in Chicago, Illinois, at the William B. Ogden Elementary School and at Wells High School.

In September, 1961, he entered the University of Illinois at Navy Pier. In 1963 the Navy Pier branch of the University of Illinois relocated to the present site of the Chicago Circle. Here, he received the degree of Bachelor of Arts with a major in history in June of 1967.

In September, 1967, he entered DePaul University of Chicago, and in June, 1969, received the degree of Master of Arts in American diplomatic history.

After working as a teacher for three years in the Chicago public school system, he entered Loyola University of Chicago in January of 1973, where he is currently working toward the degree of Doctor of Philosophy in educational history.

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CHAPTER I

MAINSTREAM OF EXPLANATION PARADIGMS

Rationale

The instructional skills involved in tennis, like the teaching skills utilized in a formal educational setting, must be cultivated and learned. Teaching involves more than a possession of subject matter competence on the part of an instructor employed by a specific educational institution. It involves more than the acquisition of knowledge and the possession of certain physical skills on the part of an instructor of a particular athletic technique, such as tennis instruction.

A tennis instructor may very well understand the underlying scientific reasons, including the mechanical, physiological, and kinesthetic principles, upon which a particular tennis stroke or technique is based. The instructor may also possess all the requisite physical endowments such as speed, stamina, strength, eye-hand coordination, and agility as well as a thorough understanding of those aspects of tennis involving technical know-how such as strategy and physical dynamics or techniques of stroke production. In other words he may be an outstanding competitive player. However, in the process of teaching an individual, the instructor realizes that his understanding of

the theoretical or scientific bases and his possession of high level motor efficiency are not in and of themselves sufficient to help the student realize his potential in acquiring a particular tennis stroke or technique.

As a necessary condition for successfully transmitting his skills in tennis so that the student can apply it at a personal level, the teacher must become adept in one of the major tools available to him to transfer his skills--the different types of explanations. Interestingly enough, the instructor is usually not aware of why he pursues his particular explanatory sequence, nor is he aware of the philosophical assumptions behind the different explanation paradigms available to him.

Far too often, the instructor in tennis is motivated by certain utilitarian or pragmatic considerations which ultimately boil down to monetary factors. The tennis teaching professional is employed by someone to give tennis lessons of either a private, semi-private, or group nature. These lessons consist of a predetermined number ranging from one to a series of lessons, and usually lasting from one-half to one hour. The tennis instructor becomes a captive of the numbers game. The rules are simple: teach as many individuals as possible within a given amount of time. With this kind of arrangement, the tennis instructor soon subscribes to an assembly-line mentality and is more concerned with production efficiency and with immediate quantifiable results. He does not really engage in an analysis of

instructional sequence utilizing explanation models but rather judges the efficacy of his labors by how many students can reasonably replicate the tennis strokes taught in the learning sessions regardless of what teaching technique happens to be employed. As long as he gets some tangible results, the tennis teacher usually does not seek to examine critically or to analyze the explanatory methodology used in bringing about the desired results.

To compound this problem, there is no one universally accepted system of teaching tennis. There are myriad schools of thought on the best approach in tennis instruction. The United States Tennis Association, the United States Professional Tennis Association, the Dennis Van der Meer Tennis Universities represent but three of many groups devoted to a particular, tennis instructional philosophy. If the instructor is to any degree analytical in terms of his teaching procedures, it is usually in the area of "surrogate" explanations such as analogies or modeling.

There are essentially seven types of explanations which can be taken from the field of philosophy and used in tennis instruction. Although different philosophical sources may differ in nomenclature, certain distinct categories can be ascertained. For the purposes of this dissertation, they are as follows: analytic explanations which comprise a separate category, and synthetic explanations which can be broken down into six sub-categories: descriptive explanations; interpretive explanations; reason-giving

explanations; value explanations; obligation explanations; and lastly, scientific explanations.

It will be the purpose of this dissertation to analyze the various models of explanations in philosophy and then to see which of these models are applicable and the extent to which they are applicable to tennis teaching. There are many tennis teaching professionals who have achieved considerable renown as innovative technicians and teachers in their field, because they have made a concerted effort to study and to improve the underlying structure of their craft. Individuals such as Dennis Van der Meer and Vic Braden have developed many innovative techniques designed to facilitate the learning of tennis skills on the part of the neophyte. However, many of their novel teaching aids are dependent upon visual cues such as modeling or some kind of sight or verbal analogy with which the learner is familiar thus enabling a smoother transfer of learning to occur. In spite of the plethora of new ideas which have been introduced to improve teaching techniques, there has been no systematic analysis of one of the potentially most effective instruments at an instructor's disposal to bring about a transfer of his own tennis skills to his student--"explanation paradigms." Verbal explanations are usually the first alternative utilized by the tennis instructor to effect a change in the students--a change in behavior culminating in the acquisition of tennis skills. The instructor, in most instances, restricts himself to the use of only two or

perhaps three kinds of explanation models. If they fail to bring about the desired result, the instructor will resort to another modus operandi including the use of analogies, modeling, or certain recently developed mechanical aids.

There are certain tennis instructors who subscribe to the "one picture is worth a thousand words" school of thought. In essence such instructors feel that the overuse of verbal explanations only confuses the learner, and that physical demonstrations by the instructor followed by imitative repetitions by the student are the best course of action in terms of learning tennis strokes. One suspects, however, that many instructors endorse this school of thought because of the limitations imposed by the time factor on a lesson session. Since most lessons are from one half to an hour in length, instructors feel a compelling urgency to get their charges swinging at a ball, in one fashion or another, as quickly as possible. Many instructors and students as well share the impression that good tennis instruction must involve constant movement. In fact some students feel that they are not getting their money's worth unless they engage in continuous physical activity from the moment the lesson begins till the moment it ends. What such individuals, teachers and students alike, fail to understand is that there is a threefold purpose to tennis instruction, at least in this dissertation's viewpoint: the first aim is to enable the student to mentally grasp the rudiments of a particular tennis technique; the second aim

for the student is to practice the tennis rudiments within the limitations imposed by the lesson time, under the critical supervision of the instructor so that, by dint of this guided repetition, the technique may be grooved to some degree--the latter involving muscle memory or the ability of the mind to form bonds with specific sets of muscles; and, the third and most important aim is to encourage the student to go out on his own and practice intelligently. Only through intelligent practice as a correlative of lessons can a student really apply what has been explained in the lessons for his own benefit. Explanation paradigms, utilized judiciously, can serve as an effective agent first in helping the student grasp the fundamentals of tennis stroke techniques and then in helping him come to know how to use his practice time sagaciously. Practice time is used to help groove strokes, develop timing, and acquire ball sense which is the ability to stroke it effectively.

One of the major contentions of this dissertation is that many instructors of tennis have been limiting their effectiveness as facilitators of learning in the tennis field by neglecting to acquire a thorough understanding of one of the most important instruments to bring about a transfer of skills--the different types of explanation paradigms. The paramount concern of this dissertation will be to show how an understanding of philosophy can have a pragmatic application in improving an educational enterprise. The educational enterprise selected for this dissertation is the

field of tennis instruction. The author of this dissertation feels well experienced both in the field of academics as an instructor of education at Loyola University of Chicago and in the field of tennis instruction as a teaching professional at the Oakbrook Park District Racquet Club, Oakbrook, Illinois. Tennis instruction only constitutes one example. It is hoped that other practical uses will be extrapolated for still other educational enterprises as well as for other fields of endeavor not necessarily related to academic ventures.

The Concept of Explanation

Before attempting to analyze the previously cited seven explanation paradigms in their relationship to tennis instruction, it is necessary to explain what is meant by the general concept of explanation.

In defining the concept of explanation, it is first necessary to make a distinction between the verb "to explain" and the noun "explanation." The verb form involves a specific activity on the part of someone. To explain something is to do something, just as to run, to jump, to laugh or to cry is to do something. An explanation, on the other hand, is not an activity or a doing at all but consists of sentences or statements about something. Of course, one can certainly do things with explanations such as offer an

explanation or defend an explanation.¹

It is also important, at this point, to understand that the verb "to explain" has two different connotations. In one sense, to explain is suggestive of some kind of research or inquiry, while in the second sense, it has to do with teaching. The research or "inquiry-related" explaining may be distinguished by the syntactical form of "explaining something." The "teaching-related" explaining may be remembered as "explaining something to someone."² Two examples will illustrate the differences between the "inquiry-related" and the "teaching-related" senses. They are as follows:

1. Dennis Van der Meer seeks to explain to himself his theory of tennis instruction.
2. The tennis instructor was explaining to someone Dennis Van der Meer's theory of tennis instruction.

"Explaining something" which is inquiry or research-related is a success or achievement verb, while "explaining something to someone" is a task verb. The distinction between the success verb and the task verb can be better understood by the different goals sought by the two. In "teaching-related" explaining, as in example two, one is trying to fulfill a pedagogic function by imparting to another individual appropriate knowledge. A major obstacle

¹Jane R. Martin, Explaining Understanding and Teaching (New York: McGraw-Hill, Inc., 1970), p. 13.

²Ibid., p. 15.

of "teaching-related" explaining is one of getting the message across to someone in the best possible manner. "Explaining something to someone" is a task verb because the explicator is attempting to inculcate another with certain knowledge already possessed by the former. In the other instance, as in example one, we see an illustration of an individual who is trying to "explain something." It is a success or achievement verb, in that this individual is attempting to find out something, and his major dilemma does not revolve around pedagogy but has to do with conducting the relevant sort of inquiry.³ "Explaining something" involves the attainment of a personal goal which is the understanding and mastery of some knowledge or skill heretofore not in the domain of one's personal experience. This has been accomplished largely through the fruition of individual labor, unlike the task verb which involves mutual interaction.

The pedagogic-related "explaining something to someone" will be designated as "explaining_T." The subscript "T" indicates that a teaching or a pedagogic function is to be fulfilled. The "inquiry-related" explaining will be shown as "explaining_R" to emphasize its research or inquiry-related purpose.⁴ Instructors of tennis, in most instances, are more concerned with "explaining_T" episodes than with the

³Ibid., p. 15.

⁴Ibid.

other type.

The nounal form of the pedagogic-related "explaining something to someone" may be stated as "explanations of something for someone," while the inquiry-related explaining will have its nounal counterpart in "explanations of something by someone." Henceforth, to simplify matters, the nounal form of "explanations of something for someone" will be specified as "explanations_D" with the subscript "D" indicating that some kind of discourse must take place between the explicator and the one who is receiving the explanation. The nounal form of "explanations of something by someone" will be designated as "explanations_F" with the subscript "F" indicative of the fact that research findings are bound up in the explanation.⁵ Again, tennis instructors will most often have recourse to explanations_D rather than explanations_F.

Explanations, it must be reiterated, serve a dual function. There is an "activity" or "process" which is involved as in the case of "explaining something to someone" or "explaining_T." There is also a "concept" involved as in the case of the nounal form of "explanations of something for someone" or simply "explanations_D." The activity of explaining is more all-encompassing in scope than the concept of explanation, for the latter is just a part of the larger explicating process. The explaining activity

⁵Ibid., p. 19.

involves an interaction between an explainer and the one to whom the explanation is directed. During the course of this interaction, an explanation is given which brings about an understanding on the part of the individual to whom the explanation is rendered.

In order to bring about a clearer understanding of what goes on during an explaining episode, it must be remembered that when one refers to an explanation per se, he, in many instances, is seeking to give a definition of something. For instance, one may be asked to explain or give a definition of a forehand groundstroke. When one is asked to give such a definition, he is obligated by the conceptual function of an explanation to state certain "logically necessary" or "logically sufficient" conditions which determine the perimeter or limits of what is being defined. Logical necessity in definitions means that in order for something to be classified as an X, it must possess a requisite condition or property P. Any term lacking P cannot be classified as an X no matter what other properties it may possess.⁶ In our ensuing example of the "forehand groundstroke" definition, there is more than one logically necessary condition or property. These may be enumerated as follows:

⁶Peter Achinstein, Concepts of Science: A Philosophical Analysis (Baltimore: The Johns Hopkins Press, 1968), pp. 3-4.

1. There must be an attempt to propel a ball with a tennis racket toward the opposite side of the court, otherwise it may be just a simulated swing.
2. The stroke must be hit in a lateral motion with the hitting arm coming across the body and palm turned forward, otherwise the stroke could be labeled as a backhand with the swing arm going away from the body.
3. The ball must bounce at least once before being struck by the racket, for if it were hit in the air, the stroke would be labeled as a volley.

In citing these logically necessary conditions, the definer assumes that a player whose forehand swing is being defined is in an actual playing or practicing situation rather than in a position of simulating a swing in front of a mirror, for instance. If the forehand groundstroke definition lacks any one of these conditions or properties, then it cannot be classified as that particular definition. The emphasis then is really on whether the definition "lacks" a particular condition for classification. When one refers to a logically sufficient condition for a certain definition, the emphasis shifts to whether a term "possesses" a requisite condition for classification.⁷ In giving a definition of a "tennis stroke," for instance, one might state that a logically sufficient condition or property would be that a stroke consists of a "propelling of a ball by a tennis racket toward the opposite side of the court." If the aforementioned condition is cited, then a definition of a "tennis stroke" has been produced irrespective of other

⁷Ibid., pp. 5-6.

conditions which may be included, such as spin, footwork or follow-through. This one condition is sufficient, in and of itself, to state that a definition of a "tennis stroke" has been given. It is also possible that one condition is both logically necessary and logically sufficient for the occurrence of a particular definition. The previously cited definition of a "tennis stroke" provides an example of this.

To bring about a clearer understanding of the differences between logically necessary and sufficient conditions, let us reconsider the forehand groundstroke concept. Each one of the three logically necessary conditions is needed to bring about an understanding of the skill concept. However, each of the logically necessary conditions, as a single entity apart, cannot bring about a complete understanding of the "forehand groundstroke" concept. Only when considered collectively can the three logically necessary conditions enumerated bring about an understanding of the "forehand groundstroke" concept. In other words, these three logically necessary conditions collectively are "logically sufficient" for bringing about an understanding of the skill concept.

There are also instances when a condition may be logically sufficient but not logically necessary when describing something. For example, in describing a tennis match, we can state that a logically sufficient condition would involve a "competitive encounter between two tennis players (the game of singles)." This condition is sufficient, in

and of itself, for describing a tennis match. However, this condition need not be logically necessary for describing a tennis match. If this condition were not stipulated, we can still have a description of a tennis match. For example, a tennis match consists of a "competitive encounter between four players (the game of doubles)."

In most instances, when one is seeking to define something with precision, the major concern is with "logically necessary" conditions. It should be emphasized that when an individual cites these logically necessary conditions defining a particular concept such as the previously discussed "forehand tennis stroke," he is primarily concerned in bringing about an "understanding" of the concept. He is not attempting to bring about the physical execution of the tennis stroke skill embodied in the concept.

Because explanations also have an activity function, one must be concerned with certain conditions which govern the explicating episode. These conditions when applied to an explaining episode are considered as either "empirically necessary" or "empirically sufficient." Since explaining episodes are much broader in scope than explanations per se, the latter being part of the former, the conditions setting the limits for the activity are likewise more all-encompassing. When one refers to a particular condition as empirically necessary for the occurrence of a second condition, he means that without the first condition, the second could not

have occurred.⁸ To see how this would apply to a tennis explanation, let us re-examine the forehand tennis stroke example.⁹ Our previous discussion centered around the logically necessary conditions defining the concept of the forehand groundstroke. It was pointed out that logically necessary conditions have a specific function. A tennis instructor employs them to bring about an "understanding" of the particular concept, in this case the forehand groundstroke. These logically necessary conditions are not used to bring about the actual physical performance of the skill embracing the concept. Empirically necessary conditions, on the other hand, have a dual function during the instructor's explanatory dialogue. At an early point of the explanatory dialogue, empirically necessary conditions also may be used to help bring about an "understanding" of the forehand groundstroke concept. Later in the explication, the instructor employs the empirically necessary conditions as the instrument translating the concept of the forehand groundstroke into the actual physical execution of the skill.

When an instructor cites the logically necessary conditions defining the forehand groundstroke, he does so with the hope that by enunciating those logically necessary conditions, he will enable the student to acquire a clear idea

⁸Robert H. Ennis, Logic in Teaching (New Jersey: Prentice-Hall, Inc., 1969), p. 313.

⁹See pp. 12-13.

of the stroke concept. Sometimes, however, this is not the case. For instance, some students who have had very little contact with the sport of tennis may still have difficulty conceptualizing the stroke. An instructor may then use other means to bring about understanding. One way involves the use of "empirically necessary" conditions during the explanatory dialogue. For example, the instructor may say that in order for the student to grasp the idea of a forehand, it is necessary that the student study a film on the forehand groundstroke by Dennis Van der Meer. The instructor may then cite an empirically necessary condition involving student emulation of the teacher's forehand groundstroke technique. According to the instructor, either one or both of these stipulated conditions will enable the students to understand the forehand groundstroke. If just one of these conditions enables the student to understand the stroke, then it is both empirically necessary and sufficient. If both conditions are needed to bring about understanding, then both together are empirically sufficient.

The other function of empirically necessary conditions is to bring about the actual physical execution of the skill embodying the concept. During the early stage of the explanatory dialogue, a "parallel" state exists between the logically necessary conditions regulating the definition and the empirically necessary conditions governing the explanatory dialogue. That is, the logically necessary conditions defining the forehand groundstroke concept are also some of

the empirically necessary conditions required to translate that concept into the physical execution of the skill. This "parallel" state occurs because, at this point, the empirically necessary conditions governing the explanatory dialogue are as accurate and as precise as the logically necessary conditions regulating the definition. During this parallel state, the empirically necessary conditions cannot yet, in themselves, effectively act as the instructor's instrument translating that concept, in this case the "forehand groundstroke," into the actual physical performance of the skill. Other empirically necessary conditions which go beyond the scope of the logically necessary conditions and the empirically necessary conditions previously cited must be put into play. This is made possible because explanations as an activity are broader than explanations in themselves. Therefore, in stipulating empirically necessary conditions for an explicating episode such as those governing the execution of the forehand groundstroke, one can conceivably enumerate other conditions relating to "cause-and-effect" which are not part of the definition. For instance, these other empirically necessary conditions may involve physical dynamics such as proper weight transference, correct footwork, and scientific principles involving mass and velocity. These later empirical conditions when added to the earlier conditions serve as the instructor's tool in translating the forehand tennis stroke concept into the actual physical execution of the skill embodying that concept.

We will now turn our attention to empirically sufficient conditions. When one speaks of empirically sufficient conditions, one is stipulating that under a specific circumstance, given the occurrence of the first condition, the second condition was bound to have occurred.¹⁰ Empirically sufficient conditions, like their empirically necessary counterparts, serve a dual function during the explanatory dialogue. They serve to bring about an understanding of a particular concept and, in the case of a skill concept, to bring about the actual physical execution of the skill embodying the concept.

Let us re-examine the example of the "forehand groundstroke" to illustrate the "understanding" function of empirically sufficient conditions. Again, we are involved in a hypothetical situation in which the tennis instructor has attempted, to the best of his ability, to create an understanding of the forehand groundstroke concept through the rendering of the previously cited logically necessary and sufficient conditions. He has, however, been unsuccessful in this endeavor for one reason or another. Therefore, during the explanatory dialogue, the instructor utilizes certain empirically sufficient conditions to achieve this end. The instructor, in this instance, states that in order for the student to understand the forehand concept, it might be helpful that he imitate the forehand motion of the

¹⁰Ibid.

instructor. The student, in this case, happens to possess above average physical coordination as well as a high level skill in mimicry. This one condition cited by the instructor is sufficient, in and of itself, to help this student acquire an understanding of the stroke concept. However, for other individuals who lack this student's physical skills, such a condition may not be sufficient. To illustrate this, let us take another example. For students who are cerebral and analytic in their approach to tennis, an instructor might cite an empirically sufficient condition for understanding the forehand groundstroke concept involving the reading of a book on tennis stroke analysis. This last condition is empirically sufficient for that type of individual. Still other individuals may require a combination of empirically necessary conditions when combined together form an empirically sufficient condition for understanding the forehand groundstroke concept. For example, some students may need to read a book on tennis stroke analysis as well as to imitate the instructor before the forehand groundstroke concept crystallizes in their mind. The important point to remember is that an empirically sufficient condition for bringing about an understanding of a particular concept varies from person to person depending upon individual characteristics and abilities. We should also add that when an instructor utilizes logically necessary and sufficient conditions to bring about an understanding of a concept, he is successful in most cases with

the majority of individuals. It is only for certain individuals and certain groups that empirically necessary and sufficient conditions are needed additionally to bring about understanding of the concept.

The second function of empirically sufficient conditions is to bring about the physical execution of the skill embodying the concept. Again, the empirically sufficient condition employed by the instructor to bring about the skill execution on the part of the student will vary from individual to individual. For example, let us again consider a student who possesses both above average physical ability as well as a complete understanding of the forehand groundstroke. In order to have this student physically execute the forehand groundstroke, the instructor need only stipulate the condition of "practice." For this student, this one condition is empirically sufficient for executing the stroke. For other students, the empirically sufficient conditions may involve visual cues or listening to another tennis instructor with a different instructional approach.

It is also interesting to note that a student may acquire a particular skill such as a forehand groundstroke without really understanding the concept of the skill. For example, there may be a tennis instructor who cannot explain a particular concept through either logically necessary/sufficient conditions or empirically necessary/sufficient conditions. Perhaps he is an expert competitive player who lacks expertise in teaching through explanations. However,

this instructor may still be able to transmit the skill to his students through techniques such as modeling. Although the instructor may be able to impart skills through these other techniques, he is still handicapped as a teacher by his lack of expertise in one of the most important tools of teachers, explanations.

The Major Explanation Paradigms from
Philosophy Potentially Applicable
to Tennis Instruction

This brings us into a discussion of the seven types of explanation paradigms which constitute a sine qua non for the conceptual framework of this dissertation. There are basically two major categories of explanations: analytic and synthetic. Analytic explanations comprise one separate category, while the synthetic category can be divided into six sub-categories of explanations. They are: descriptive, interpretive, reason-giving, value, obligation, and scientific. Each of these categories has certain conditions to satisfy in order to be classified as a particular explanation paradigm whether in its role as an activity or as a definition. However, there are also other conditions which must be met which have nothing to do with the classification of explanation paradigms into different categories. These conditions have to do with the usefulness of the particular explanation paradigm in any given situation and are known as the five criteria for the evaluation of explanations. They are as follows: truth, proper level of

sophistication, non-circularity, proper function and type, and testibility/applicability. Each of these evaluation criteria will be discussed in turn according to its particular application to the specific explanation paradigm. Some of the criteria will not be applicable to every paradigm. It may also be the case that the five criteria of evaluation need not be discussed in relationship to certain explanation paradigms, because the models are rather easily understood and the relationships can be inferred without undue difficulty as in the case of descriptive and interpretive explanations.

The first category of explanations_D to be considered is that of an analytic nature. These explanations_D invariably contain general statements which are analytic.¹¹ Such analytic statements are logically necessary and sufficient in defining analytic explanation_D episodes. Such general analytic statements are accepted as true, within a given context, merely as a consequence of the words appearing in the statement. Such statements cannot be challenged because no conceivable test can exist for them. In fact, to challenge such statements would be self-contradictory.¹² Examples of analytic statements would be the following:

1. A square is a plane figure having four equal sides and four right angles.

¹¹Ibid., pp. 306-307.

¹²Ibid., pp. 300-301.

2. A widow is a woman whose husband is deceased.

The real criterion for an analytic statement is that there can be no conceivable counter-examples.¹³

One major problem with analytic explanations_D is that of circularity. An example of circularity would be the following dialogue:

Questioner: How does that tennis player move so quickly on the court?

Explicator: Watch his feet, he really moves them well.

Such dialogue is often heard as part of tennis commentary on television. Whether such statements can be considered circular depends upon the context of the request and the individuals involved in the explanation_D episode.¹⁴ For a particularly naive tennis fan, the answer may be satisfactory. At this fan's particular stage of tennis experience and knowledge, such a rejoinder quenches his curiosity and is an adequate response. However, if the aficionado were more sophisticated and knowledgeable in tennis, such a response would be circular and unsatisfactory. This more knowledgeable fan would realize that quickness on a tennis court conveys the notion that the tennis player's feet must move well. Hence, that explication would not really explain how the tennis player moves so swiftly about the court dimensions. An adequate reply to this fan, which would avoid a

¹³Ibid.

¹⁴Ibid., pp. 306-307.

tautological impasse, might cover a tennis player's training program, for instance.

Like all paradigms of explanations, those of the analytic variety must also satisfy certain external criteria of evaluation. The two criteria which are of special concern for analytic explanations are truth and proper level of sophistication. The truth criterion is obviously satisfied for to deny an analytic explanation would be self-contradictory. The proper level of sophistication criterion is a function of contextual factors as evinced by the preceding tennis example.

The second category of explanations involve the synthetic distinction. The synthetic category can be broken down into six subcategories; however, they all share a characteristic which taxonomically separates them from those in the analytic camp. Synthetic explanations contain general statements of a synthetic rationale. Synthetic statements are those in which a logical possibility exists, though not necessarily factually accurate, of a counter-example.¹⁵ For example:

1. The server always initiates the point in a tennis match.
2. If a tennis player lobs a ball up into the air outdoors, the ball, if unimpeded, will return earth-bound.

Both of these examples represent factually accurate

¹⁵Ibid., p. 302.

statements. However, in both examples one and two, it still remains logically possible to conceptualize counter-examples to the particular statements. For instance, in the first example, one is able to conceive of an imaginary situation in which the customary tennis rules have been altered for a new game known as "tennis two" where the point is initiated by an umpire who throws the ball up into the air in the same fashion as a center jump in basketball. A counter-example can also be thought of for example two. A tennis player lobs a ball up into the air outside, but the ball does not return to the ground because at this hypothetical moment, the laws of gravity have been suspended. Although these counter-examples are not factually correct, still one can conceive of hypothetical situations in which both are theoretically or logically possible.

The first explanation paradigm to be discussed under the synthetic category is "descriptive explanations." Explications of this genre detail a particular process or a structure in a carefully ordered sequence such as a chronological succession in the case of a process or in perhaps a logical ordering entailing either "increasing generality" or "decreasing generality" as in the case of a structure. Unlike an "interpretive explanation_D" which seeks to define terms or a "reason-giving explanation_D" which stipulates the causes of certain courses of action, the descriptive explanation gives a straightforward account of a particular

process or structure.¹⁶ The ensuing dialogue is an example of a descriptive type of explanation:

Questioner: Explain how a tennis serve is executed (which involves stating the steps in the process).

- Explainer:
- a. Use either the backhand or continental grip.
 - b. Provided one is right-handed, position yourself on the baseline with the left foot two to three inches behind the baseline and at approximately a forty-five degree angle to the net.
 - c. Place the right foot approximately a shoulder width behind the left with the heel in a line. The right foot should be parallel to the net.
 - d. As you prepare to serve, the balls and racket should be held just in front of the waist on the left side.
 - e. With the left hand, throw the ball up to such a height so that it can be hit with a fully extended right arm at a point slightly in front of the left foot.
 - f. As the ball is thrown up, the right arm drops in the beginning of the swing until it is fully extended behind the right leg. The racket does not pause in this downward movement, but continues from there in a semi-circular upward motion to a position behind the head. Let the racket reach a back-scratch position so that the head of the racket almost touches your lower back with the butt-end of the handle pointing up, and the elbow pointing to the backstop.
 - g. Raise yourself on the left toes to reach the maximum height at the moment of impact.

¹⁶Ibid., p. 255.

- h. Just as you hit the ball, your body weight goes forward, and your right foot steps forward into the court area.
- i. After impact, the follow through begins, bringing the arm and racket down across the body.

Although this is by no means a complete explanation of the steps involved in a service, it does suffice to show what is involved in a descriptive explanation_D. To give another example, if one were asked to explain the structure of the United States Tennis Association, one would enumerate the parts of the organization and their relationship to one another in terms of matters such as functions and hierarchical prestige.

Requesting a descriptive explanation_D generally involves the use of certain verbal, explanatory cues on the part of the individual seeking the explanation which signal his desire for such an explanation. The most common locution used to request a descriptive explanation_D is "explain how...." This would be the case whether requesting an explanation of processes or structures.¹⁷ It must be kept in mind, however, that the locution "explain how" may be utilized for other kinds of explanation paradigms as well. It can be used to request a reason-giving explanation_D provided that other words are used along with it to alter the nature of the request. For example:

¹⁷Ibid., pp. 258-260.

Explain how it is possible for a right-handed tennis server to make the ball swerve left in an American twist serve.

Furthermore, a request for a descriptive explanation is by no means limited to the locution "explain how." One can just as readily request a "process" or "structure" explanation_D by directly including the words "process" or "structure" in the request itself without even using the word "explain."¹⁸ Two examples are the following sentences:

1. Describe the process of hitting the forehand.
2. Describe the structure of the United States Tennis Association.

The second synthetic explanation paradigm is the interpretive explanation_D. One who is rendering this kind of explanation_D is usually requested to give the meaning of something. The word "meaning" is often part of the locution used to request an interpretive explanation_D.¹⁹ The following example will provide an understanding of this:

Questioner: Please explain the meaning of double-fault.

Explainer: A double-fault is a situation where the server fails in both his opportunities to get his service to land into the proper serving area, thereby losing the point.

Reason-giving explanations which comprise the third subcategory of synthetic explanations are perhaps the most widely used of any of the paradigms, especially in everyday

¹⁸Ibid.

¹⁹Ibid.

discourse. From an individual's earliest years, he is constantly absorbed by the events around him and his relationship to these external happenings. As a consequence, he persists in asking the question "why" in order to better understand the phenomena which occur around him. The word "why" is the most common cue to a reason-giving explanation_D. Other possible cues which signal an ensuing reason-giving explanation_D are: "account for," "cause," "reason for," and "how do you know?".²⁰

Although there are many different ways to request reason-giving explanations, all such explanations can be characterized by a particular bifurcation consisting of an "explicandum" and an "explicans." The former is that which has to be explained, while the latter is the material actually used to bring about an understanding of the explicandum. The material in the explanation or explicans must be able to produce a deductive, valid argument yielding the explicandum as the conclusion.²¹ William Dray's "continuous-series model of explanations_D" provides a rationale in terms of making clear what is sought during a reason-giving explanation episode.²² Dray says a reason-giving explanation_D gives a continuous-series of happenings, breaking down an event into a conglomerate of sub-sequences leading up to the

²⁰Ibid.

²¹Ibid., pp. 38-39.

²²Ibid.

event. Given a hypothetical situation, if a tennis analyst at a tennis match is asked a question concerning the reasons why Rod Laver lost the particular encounter, he should be able to describe the events leading up to the loss. But much more is involved than the ability to produce any kind of explicans. For instance, if a tennis aficionado were to ask a tennis analyst of the first order such as Allison Danzig why the United States was unexpectedly defeated in the 1976 interzone Davis Cup matches with Mexico, the response may be that the matches were played in Mexico thus giving their team a decided hometown advantage. Whether such a response is an explanation_D for the upset defeat of the United States depends on who says it to whom or, to state it more formally, it depends on what variables are presupposed or contextually supplied.²³ To the tennis tyro who asked the question, the response may have proved satisfactory. He may not have been looking for a particularly in-depth analysis of the Davis Cup matches. The response given has satisfied his curiosity. Then, too, the explanation may have proved satisfactory for a totally different reason. Perhaps, Danzig's explanation involving the Mexican locale has triggered a whole myriad of reasons in his mind why such a location would render the Mexican squad victorious and reduce alleged American superiority to impotence. However,

²³Martin, Explaining Understanding and Teaching, pp. 38-39.

for another hypothetical questioner Danzig's response would be inadequate. For the new questioner, the answer given would not provide a deductive, valid argument yielding the explicandum; it would be an incomplete explanation. Such incomplete explanations could be made complete by adding material which together with the explicans does imply the explicandum. This process is called "gap-filling."²⁴ In the case of the newcomer, he does not, for some reason or other, readily see the connection between the United States tennis loss and the play being staged in Mexico. Therefore, it is up to the explicator to fill in the gaps in the explanation, so that it does logically infer the explicandum. In this particular instance, the explicator Danzig can do this by adding bits of information which would make his aforementioned explanation more plausible to the questioner. He can show how playing in Mexico would have an adverse effect on the United States Davis Cup Squad. For instance, Mexico City, the site of the tennis confrontation, is thousands of feet above sea level. This high altitude affects both the flight of the balls, making them bounce unaccountably high, and also the breathing of those not used to the rarified atmosphere. Secondly, in Mexico City, the interzone matches were played on a red clay surface which slowed down the speed of the ball and blunted the aggressive styles of American players such as Jimmy Connors.

²⁴Ennis, Logic in Teaching, p. 261.

Lastly, Latin American spectators are extremely nationalistic and vocal, and foreign players who participate in important tournaments staged in these countries must feel a kinship to the Christians during the Roman era of the Colosseum spectacles. Thus, there are important emotional and psychological considerations. If these gap-fillers were added to Danzig's original explicans, he would have made a complete explanation. However, circumstances may arise which make it either impossible or even unnecessary to secure a complete explanation_D from the explicator. The author of a book which one is reading provides an example of the first situation. Since the author is not readily accessible to the reader, the latter would not be in a position to secure a complete explanation_D if the material required some gap-filling. An example of the second situation would involve an experienced person who was receiving the explanation. This individual could save time by inferring the gap-filler rather than formally requesting it from the explicating interlocutor.²⁵

As in the case of the previous explanation paradigms, reason-giving explanations_D must conform to the various criteria for the evaluation of explanations. The two which we will consider in their relationship to reason-giving explanations_D are proper level of sophistication and proper

²⁵Ibid., pp. 269-270.

function and type. The proper level of sophistication is important in reason-giving explanations because what constitutes a satisfactory, complete explanation for one individual may be totally unsuitable for another. The Davis Cup matches previously alluded to affords an example of this. Each of the questioners of Danzig saw completely different ramifications in Danzig's answers according to his particular level of tennis expertise and experience.

When one speaks of the evaluation criteria of proper function and type, one is speaking of a particular measure most closely associated with reason-giving explanation paradigms. There are basically two functions of reason-giving explanations_D: "accounting for something" and "justification."²⁶ In most instances, the cue that an accounting for explanation_D is desired is the indication that the matter to be explained is to be accepted as a fact. For example:

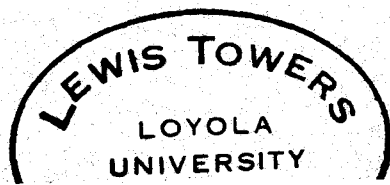
Mr. X. Why was Bill Tilden the greatest tennis player ever?

Mr. Y. Because he had the greatest range of strokes and tactical sense of the highest order.

In this preceding example, Mr. X accepts a priori the idea that Bill Tilden was the greatest player of all time. All that Mr. X asks of Mr. Y is the latter's reasons why he felt this to be true. Mr. X is merely seeking confirmation of something which he believes to be factually accurate.

Roughly speaking, the sign that a justification explanation

²⁶Ibid., p. 292.



is sought is the indication that the explicandum needs to be shown true. The following dialogue will serve as an example to clarify the distinction:

Mr. X. Why does one need topspin on groundstrokes?

Mr. Y. Because it causes the ball to drop into the court leading to greater control.

In this case, Mr. X is asking his compatriot why one executes a particular technique in a tennis stroke production. Mr. X is seeking reasons or proofs vindicating why topspin is, in fact, applied during the particular strokes.

Value and obligation explanation_D paradigms comprise the fourth and fifth subcategory under the synthetic distinction. They are typed as such because they respectively attempt to give explanations conveying a subjective evaluation of worth and personal duty.²⁷ One of the most common cues in requesting a value explanation_D is the word "justify." One may ask, for example, another individual to justify his values. A far more direct approach would be to phrase the question explicitly using value-laden words such as "good" or "bad." An example of this would be the following repartie:

Mr. X. Why is that a good, non-fiction tennis book?

Mr. Y. Because it is complete, objective, scientific, analytical, and yet easy to understand.

There are many possible locutions which augur the start of an obligation type of explanation_D. Verb forms such as

²⁷Ibid., pp. 328-329.

"should," "ought," or "must" used in the explicandum often express a desire for this kind of explanation. For example:

Mr. X. Why should a tennis umpire know the rules?

Mr. Y. Because he ought to be able to mediate any disputes which might occur during a match.

As in the case of the previous explanation paradigms, one should seek to apply the sundry criteria of evaluation to value and obligation statements when appropriate. One must always keep in mind that value and obligation explanations differ from other explanation paradigms because of the apparent subjectivity involved. The other types of explanations, in most instances, are freer of the biases and dogmatism which are potentially inherent in value and obligation statements.

Scientific explanations_D make up our final subcategory of synthetic explanations. In everyday parlance, the chief questions to which this type of explanation addresses itself are: Why did this occur? Why have things evolved in this way rather than in an alternate way?²⁸ Explications of a scientific variety must conform to a certain conceptual framework. This conceptual framework operates under certain established principles or rules which have been extrapolated from Hempel's "Covering Law Model of Explanations." Hempel's Covering Law paradigm states that an explanation of

²⁸Daniel M. Taylor, Explanation and Meaning: An Introduction to Philosophy (Cambridge: University Press, 1970), p. 4.

a certain event "a" consists of three elements: These are as follows:

1. Universal generalization (law of statement)--when-ever an event of type "b" occurs, an event of type "a" occurs.
2. A statement of initial conditions: "b" occurred.
3. A statement of consequent conditions: "a" occurred.

If one were to apply Hempel's Covering Law Model of Explanations to a particular teaching situation in tennis, it would probably be on the order of the following example:

1. If a tennis player strokes a forehand through the proper hitting zone with his weight being transferred forward just prior to the moment of impact, the ball will have considerable pace.
2. Body weight is transferred forward just prior to racket and ball impact of the stroke through the hitting zone.
3. The pace of the ball will be considerably more than if the weight were not transferred forward.

According to Hempel's Covering Law rationale, if the generalization in (1) is true, then given the facts stated in (2) the event in (3) must occur. In other words deductive scientific explanations can be distinguished by the fact that they can be used predictively or to indicate a cause-effect relationship.

Scientific explanations usually fall into one of two different categories. The first type of scientific explanation is of the "deductive" variety and makes use of

²⁹Ibid., p. 8.

universal generalizations as in our preceding example. The other kind of scientific explanation is the probabilistic model which utilizes "statistical generalizations."³⁰ The following tennis illustration makes use of a probabilistic generalization:

1. There is a high probability of a player who runs with his eyes closed having an accident on the tennis court.
2. Player A has been running with his eyes closed on the tennis court.
3. Player A has suffered an accident (is highly probable).

Hempel argues that in the type of example illustrated above, (1) and (2) give a high level of credence to (3) but not as high as would be the case if they entailed (3) as in the scientific explanations utilizing universal generalizations. However, it is still high enough to warrant one saying that they explain it.

The evaluation criterion which applies to scientific explanations or more precisely to the "deductive" variety of scientific explanations is that of "testability." In order to explain something, deductive scientific explanations must contain an empirical generalization covering that which is to be explained. The generalization must perform two functions. First, it must conceivably cover more than one case being explained. Secondly, it must also exclude

³⁰Ibid., p. 14.

some conceivable cases. If it does not do both, it is untestable. As such, the generalization would not be reliable in generating predictions.³¹ In our preceding example of the forehand, more than one case of a player performing that stroke must be cited. Also, the generalization must exclude certain cases such as a player who swings his racket over his head rather than through the proper forehand hitting zone which is across the body in a lateral motion. The ability to generate predictions is a sufficient condition for testability.³²

Basically there are two kinds of testability: "practical" and "conceptual." An example may help one to understand the points of difference between the two:

If all air resistance were eliminated from the earth, all tennis players would be able to cover the tennis court equally well.

Obviously, such an example is not practically testable because we cannot simply eliminate all air resistance from the earth. But we can still conceive of some kind of test which could offer evidence for or against such a hypothetical situation.³³ If air resistance could be completely eliminated in a hypothetical situation, then one could conceivably take a stopwatch and measure the speed of different tennis players from point "a" on a court to point "b." If

³¹Ennis, Logic in Teaching, pp. 339-340.

³²Ibid., pp. 340-341.

³³Ibid.

all tennis players were clocked in the same time, this would constitute evidence for our generalization. If different times were amassed, this could present counter-evidence to the generalization. Thus, the generalization would be conceptually though not practically testable.

A generalization which is conceptually untestable is one for which a test appears inconceivable.³⁴ An example of a conceptually untestable generalization might be the following:

A tennis player who is running in two opposite directions on a tennis court will alternately grow and shrink in size.

This generalization is untestable because one cannot even conceive of a situation where a tennis player can run in two opposite directions and alternately change in stature. Such untestable generalizations means almost automatically that predictions cannot be made using them. Whether a generalization is testable or untestable, a decision must be made concerning the value of the generalization. If the empirical statement in the generalization proves testable, the other criteria of evaluation must be applied to it. The fact that a proposition is untestable does not automatically render it useless, for it may very well fall into the category of an analytic explanation.³⁵

³⁴Ibid.

³⁵Ibid., pp. 343-344.

The seven explanation paradigms examined in this chapter do not necessarily exhaust the range of potential explanation models. However, these seven models of explanations appear to be the major ones as far as people in philosophy are concerned. An understanding of these explanation models and their relationship to the acquisition of tennis skills is an important goal of this dissertation.

CHAPTER II

PLAYING STYLES AND TEACHING TECHNIQUES ALONG

THE HISTORICAL CONTINUUM

Historical Antecedents of Tennis

In order to understand the reasons why tennis instructors teach a certain style of play including various strata-gems and stroke production, one must be aware of how tennis evolved along the historical continuum. In order to understand tennis teaching as an art which uses philosophical tools such as explanation paradigms, modeling, and analogies to achieve its ends--the transfer of tennis skills to the neophyte--one must be cognizant of the game's historical development and heritage.

The sport of tennis, unlike baseball, basketball or football (not to be confused with soccer) which are uniquely American in origin, has a long evolutionary history outside of the United States. Although enjoying unprecedented popularity today, tennis, in one form or another, has been in existence for many centuries. There is historical evidence, in fact, which indicates that a rudimentary form of tennis has been in existence since approximately 500 A.D., and that its roots are to be found on the banks of the Nile and in

Persia.¹ From its origins in Egypt and Persia, this pristine form of tennis was taken over and modified by the royal houses of the continent. The French monarchs were the first to adopt the sport as a royal prerogative. Tennis came to be known as the "sport of kings." In France the game was known as "jeu de paume," and a chill after such a game led to the demise of the Valois king, Louis X in 1316 at Vincennes.² It was not only royalty who indulged in tennis. According to church documents from the twelfth to the fourteenth centuries, "longue paume" or "courte paume" was also played by seminarians, priests, monks, abbots, and bishops. The game was played indoors or outdoors, but rules forbade the clergy from playing with the laity.³ Across the channel in England, Henry VIII, the second of the Tudor monarchs, in his younger years personified the renaissance ideal of "arete" or "all-around excellence" and was a devotee of the sport of tennis at Hampton Court. One can just as easily imagine the celebrated encounter between Henry VIII and Francis I of France on the Field of the Cloth of Gold as involving tennis rather than what actually transpired, a friendly wrestling match. In 1523, Henry VIII played host

¹Lawn Tennis Encyclopedia, compiled by Maurice Brady (New York: A. S. Barnes and Co., 1969), p. 127.

²Giani Clerici, The Ultimate Tennis Book: 500 Years of the Sport, trans. Richard J. Wieszell (Chicago: Follett Publishing Co., 1974), p. 21.

³*Ibid.*, p. 33.

to Charles V, Emperor of the Holy Roman Empire, and the two played doubles against the princes of Orange and Marquis of Brandenburg.⁴

Evolution of Modern Tennis

Lawn tennis really can claim direct descent from certain events stemming from the Battle of Agincourt in 1415 which was part of the larger One Hundred Years War. At this battle, Charles, Duke of Orleans and a grandson of the king of France, was captured and made a hostage by the English. Charles, a noted tennis enthusiast, wasted away for over twenty-five years in numerous dungeons. Eventually, he was consigned to a liberal-minded gaoler, John Wingfield, who allowed his charge to engage in his pastime at Wingfield castle in 1435. In 1875, Major Walter Wingfield, who claimed direct lineage from the gaoler of the fifteenth century, revived and modernized the former sport of kings. During Wingfield's day, courts were shaped like an hour-glass with nets kept at a height of five feet, and the balls were made of uncovered rubber. In February of 1874, Wingfield took out a patent on the game which he dubbed "Sphairistike," a name which evolved from the Greco-Latin word "Sphearisteria" meaning a courtyard where a ball game is played. "Sphairistike" was later changed to lawn tennis.⁵

⁴Ibid., p. 22.

⁵Ibid., p. 62.

The rectangular dimensions of the singles court were the same as today, twenty-six yards by nine yards. The height of the net, however, was not lowered until 1884 to the modern standard of 3'6" at the net post and three feet in the center. The game was given further impetus and respectability in May of 1875 when the Marleybone Cricket Club issued rules governing playing standards. Tennis was brought to the United States in February of 1874 through the efforts of a socialite named Mary Outerbridge of Staten Island, who on an earlier pleasure excursion, had seen the game being played in the British garrison at Bermuda. Tennis was finally sanctioned as an official sport when an English newspaper, The Field, announced on June 9, 1877, that an amateur tennis tournament would be held at the All England Croquet and Lawn Tennis Club, Wimbledon, beginning on Monday, July 9, 1877.⁶

It is not until this first Wimbledon that one can really begin to speak of playing styles and teaching techniques properly. Three years before the first Wimbledon, John Moyer announced in a letter to The Field, December 5, 1874, that he had invented a new white flannel ball. This new ball had greater elasticity and was far easier to control. The ability to make the ball do what one wanted to enabled tennis players to begin developing distinct styles and teaching techniques.

⁶Ibid., p. 69.

At the time of the first Wimbledon, there were two racket sports vying for supremacy. One was the aforementioned game of tennis. The other was the game of "racquets" which was similar to modern squash although played on a much larger surface. This game of "racquets" was a relative newcomer to world sports in that its origins were to be found in the nineteenth century. The head of the racquet's rackets was pear-shaped, and the overall configuration resembled a contemporary squash racket. The grip for the racket was the same for all strokes; therefore, both the forehand and the backhand could be handled with equal facility.⁷

The tennis racket of this time bore no resemblance to present day rackets. Lacking symmetry, the racket had one edge of the head flattened to handle low bouncing balls and the opposite edge rounded. The tennis racket was unusually heavy, and it was accepted practice to hold the racket halfway up the handle to accommodate the bulk. All strokes were hit with a slice in which the open-faced racket, sliding under the ball, would impart backspin. The tennis clique claimed that their players would overcome the racquet's players because of the more difficult conditions imposed by outdoor play. In addition tennis players could serve more effectively than their racquet playing counterparts. Some tennis players were performing an iconoclastic feat by

⁷Paul Metzler, Tennis Styles and Stylists, with a Foreward by Adrian Quist (New York: The Macmillan Co., 1969), p. 6.

reaching up as high as their shoulders in the serving motion. The racquet's supporters claimed that their athletes would win because of the greater flexibility allowed them by their lighter rackets.⁸

The winner of the initial Wimbledon was the Englishman Spencer Gore whose style of play made the question academic as to which side--the tennis or the racquet--was stronger. As soon as he was given the opportunity, Gore would advance to the net and volley the ball away for a winner to which there was, as yet, no effective groundstroke riposte. The notion that the volley game is a modern phenomenon is thus shown to be fallacious. Of course, Gore was protected from passing shots because the net was five feet high at the side posts. His play style had the effect of altering lawn tennis rules; for the nets were lowered to their present dimensions due to his success. The lowering of the nets would give the baseline players a better opportunity to utilize passing shots effectively against the entrenched volleyer. The technical style which triumphed at Wimbledon was an adaptation of the grip utilized in racquets, the forerunner of modern squash. If Gore's style had to be categorized according to modern terminology, it would probably be labeled as a "continental style."⁹ Modern lawn tennis was really the offspring of tennis and the sport of racquets.

⁸Ibid., p. 6.

⁹Ibid., pp. 6-7.

The English Playing Style

During these early years when tennis had achieved respectability, one could not properly speak of specific teaching techniques applied to a particular tennis playing style, because no one individual claimed to have analytically dissected the game from a teaching perspective. It was a sport reserved for those of the upper socio-economic stratum of society. Tennis instruction was not in the domain of public knowledge as it is today. One can imagine, however, that instruction was available to those who had the wherewithal, and that it probably proceeded according to the dictates of some descriptive or reason-giving explanation paradigm interspersed with modeling or analogies. Even today, if one informally observes any individual, who is not a practiced tennis teaching professional, give a lesson to a neophyte, the most usual modes of tennis instruction appear to be the ones just cited.

The first distinctive playing style to have emerged was directly the result of the initial influence of Spencer Gore and was known as the "English" or "continental" style. The "continental" label was applied when English lawn tennis was exported to the continent, where it became associated with the slow "hardcourts" or clay surfaced courts of Europe.¹⁰ This particular mode of playing was used by the early English tournament players such as the brothers,

¹⁰Ibid., p. 13.

William and Ernest Renshaw, to maintain their stranglehold over the prestigious Wimbledon tournament all the way up to the twentieth century. This English style has certain distinct characteristics. They are as follows:

1. The "v" formed between the thumbs and the index finger lay somewhere on the left bevel of the handle when assuming the grip. This placed the palm on top of the racket, and both forehand and backhand were played with this grip.
2. The wrist was held low when stroking the ball, and the forehand was produced either flat or with a minimum of topspin, while the backhand was sliced.
3. The English style facilitated reach for wide balls, and enabled one to handle low groundstrokes and low volleys with some ease.
4. The service was sliced to keep the ball skidding through low.
5. The overall style was flexible but lacked power, especially on the forehand groundstroke side, due to the positioning of the wrist on top of the handle.¹¹

The American Playing Style

With the advent of the twentieth century, the English or continental style's dominance in playing circles was finally challenged by other playing techniques. This challenge was issued from a nation which was undergoing a transition from a Gemeinschaft to a Gesellschaft society, from a second rate status politically, diplomatically, and militarily to one of ascendancy in those areas, and from a state of

¹¹Ibid., pp. 24-25.

immaturity to adult vigor and potency.¹² The tennis style which came to the fore seemed to reflect this nation's aggressiveness and vigor. The United States became a mecca for aspiring tennis players in the early years of the twentieth century. American tennis stars such as the Doherty brothers, Reggie and Laurie, began to dominate the Wimbledon tournaments during the first decade of the twentieth century, ending the early monopoly of English players. Although the Doherty siblings played in the English vein, their American contemporaries utilized techniques which became recognized as distinctly American. This new style of play made its first appearance internationally in 1900 due to the efforts of three Harvard student-athletes: Malcolm Whitman who was the reigning U.S. champion; Holcomb Ward, one of the early exponents of the American twist service; and, finally Dwight Davis who was to achieve political eminence by becoming America's Secretary of War and governor of the Philipines. In 1900 this trio of Americans met the English tennis representatives in the inaugural international tennis competition known as the Davis Cup matches. The competition was named after Dwight Davis, the donor of the cup.¹³

¹²The terms Gemeinschaft and Gesellschaft were originally coined by Ferdinand Toennies in Community and Society: Gemeinschaft and Gesellschaft, trans. and ed., Charles P. Loomis (East Lansing, Michigan: The Michigan State University Press, 1957), pp. 223-233.

¹³Metzler, Tennis Styles and Stylists, p. 21.

The style which the Americans introduced was a result of their disaffection with the English tennis techniques which allowed flexibility but not enough power. The American grip and style was characterized by the following:

1. For the forehand, they moved the wrist and palm behind the handle and met the ball ahead of the left hip.
2. For the backhand, a pronounced grip change was necessitated with the "v" formed between the thumb and index finger a little further left of the left bevel than for the continental. To give the backhand added support, the thumb was run straight up the handle. In contrast, the English style backhand placed the thumb diagonally across the handle which was conducive for flexibility but not for power.
3. The wrist position was cocked rather than held low which meant that the racket and forearm described an "l" shape.
4. To handle low bounding balls, the English bent their knees, while the Americans met such contingencies by dropping the racket head. American power off the groundstroke needed harnessing, and this was accomplished by using topspin in marked contrast to English slice, especially off the backhand side.
5. Americans regarded English groundstroking as essentially safe and befitting the stereotyped staid, conservative British image, while they regarded their own style as adventurous.
6. Finally the Americans introduced an iconoclastic service--the American twist. Ever since Abner Doubleday invented baseball in 1839, Americans thought of themselves as natural throwers. Proficiency in throwing almost made it axiomatic that the United States tennis players would have strong serves, since the baseball pitching motion was virtually identical to that of serving. The slice service had its baseball counterpart in the curve ball. The Americans decided to add variety by introducing the American twist which had a loose parallel to a screwball in baseball. The English sliced service was accomplished by throwing the ball between the head and right shoulder, with the racket striking the upper right side of the ball in a curving arc with the swing finishing to the left of the server's

left leg. This imparted lateral spin which made the ball bound low from the server's right to his left. The toss for the American twist serve went between the server's left shoulder and his head, with the back arched, and racket whipped upwards and across the ball from left to right with a distinct wrist snap, and the follow-through ending to the server's right. This service motion imparted both topspin and sidespin which rotated the ball in the direction from the bottom left corner to the top right corner. The topspin caused the ball to arc high and then drop sharply over the net, bounding high after the bounce. The sidespin made the ball swerve from the server's right to his left, as in the slice, but because the axis of the spin was tilted rather than vertical, the bounce broke back against the swerve. In other words, the ball kicked up uncomfortably high to the receiver's backhand. ¹⁴

Armed with this new style of play, American tennis stars such as Holcomb Ward and William A. Larned made a tremendous impact upon the international tennis scene in the first decade of the new century. However, even in the United States, the American style did not go unchallenged. Off of the cement courts of California evolved another tennis style called the "Western." Proponents of the latter, in order to distinguish their mode of playing from that developed formerly, called the earlier style the "Eastern American" variety. The playing conditions native to California proved to be the catalyst in developing this new technique of playing. The concrete courts of California made the ball bounce extremely high so that a great deal of topspin was needed to keep the ball in bounds. In addition, concrete courts rapidly wore down the outer covering of the

¹⁴Ibid., pp. 20-21.

ball which made it doubly imperative to apply a great deal of topspin to control the ball. The grip for a Western forehand was designed to insure a maximum amount of topspin to the ball. Californians held the forehand grip well behind the handle with the palm virtually underneath it. The backhand was accomplished, not by a large change, but by merely turning the racket head over the top and playing the shot with the same face of the racket as for the forehand. Like the forehand, the backhand usually carried a great deal of topspin. The grip associated with this style was also instrumental in introducing two freak services which enjoyed a brief span of popularity then went into virtual eclipse--the reserve spin and the reverse twist. The Western style of play can thus be characterized by a grip which permitted forehands and backhands to be hit with the same face of the racket and by a reverse twist. But it is the forehand grip, whether of an Eastern, Western, or continental nature, which defines a particular style. It is the forehand which is the major weapon for most tennis players in both attack and defense. Hence, when one refers to one's overall style, the forehand and how it is held assume paramount importance. Therefore, even if the reverse serve is eliminated from consideration, and the backhand played in an orthodox fashion with the opposite face of the racket, the style is still deemed as Western if the forehand grip fits

the particular criteria.¹⁵

The Western style achieved a high measure of popularity due to the efforts of certain skilled practitioners of that technique such as the following: Maurice McLoughlin, whose sobriquet was the "California comet," who was an early pioneer of the serve-volley technique, and who won the U.S. national championship from 1911 to 1913; William "Little Bill" Johnston who captured the U.S. titles in 1913 and 1919, and who was the chief rival of the immortal Bill Tilden in the early 1920's for the American and world tennis supremacy; and finally, the Japanese stars Harada and Shimizu, the latter achieving a world ranking of four in 1921, the only Japanese player ever to have made the top ten in international competition. In the present decade, the chief exponent of the Western technique is the precocious Swedish star, Bjorn Borg.

But for all intents and purposes, the Eastern American style had and still has the greatest impact in terms of contemporary playing styles and teaching techniques. The popularity of the Eastern American style was due in no small measure to the influence of one tennis colossus named William Tatum Tilden. He was the high priest of this style, and those who have followed in his wake, either as players or teachers, are, in a sense, his disciples. He reigned supreme in the world of tennis during the period from 1920

¹⁵Ibid., pp. 24-25.

to 1925, although his actual tennis career extended far beyond these years. In the halcyon period of American sports history labeled as the "Golden Age of Sports," rife with heroes like Jack Dempsey, Babe Ruth, and Bobby Jones, it was Bill Tilden who commanded the most attention in the international sports scene. He was only one of two tennis stars who was capable of instigating an international incident, the other being Suzanne Lenglen, by merely refusing to participate in a major tennis tournament. Such an incident occurred in the early 1920's at the Wimbledon tournament, and it took the combined intercession of Queen Mary and President Warren Gamaliel Harding to change Tilden's mind. Although he was an embarrassingly mediocre actor, playwright, and producer in the legitimate theatre in which he had a great interest, he was a consummate and charismatic actor on the tennis courts, often feigning anger or annoyance at line calls or playing conditions to incite the crowd against him. Tennis spectators often went to Tilden's matches with the hope of seeing him lose. This showmanship combined with his tennis playing artistry made him, perhaps, the most compelling figure ever to play the game of lawn tennis.

Although there may be polemical discussions as to who was the greatest tennis player of all time, it can hardly be disputed that Tilden, however one ranks him in the hierarchy of tennis playing immortals, exerted the greatest influence in the subsequent development of tennis technique and even

tennis teaching. His stature has never been quite paralleled in the annals of tennis history. Tilden's technical style was in the tradition of the Eastern American variety. Being a great tennis analyst, he had a specific approach to how the game of tennis should be played on a competitive level. His approach constituted a particular tennis philosophy known as the "all-court game." This philosophy influenced the playing strategy of tennis players well into the 1930's. Although Tilden's technical tradition of the Eastern American style has been retained in our modern era, we have evolved different stratagems in actually playing the game itself. The "all-court game" philosophy has been eclipsed. Tilden described the "all-court game" in the following manner:

....First, I claim it must include all the standard strokes; service, both slice and twist; drive and chop, both forehand and backhand, volley and smash. Second, it must include varied depth. No longer will consistently deep driving prove a satisfactory standard. Today one must vary distance as well as direction. The short shot has its place in modern tennis just as much as the deep one. Third, the all-court game demands varied spin of the ball, with which to change pace. Every player must be able to both under-cut and top-spin his ground shots. Fourth, there must be controlled speed. Please note the word "controlled." Speed alone will not suffice; it must include sufficient control to vary it according to the opponent you face.

If I were to attempt to define the all-court game tersely, I should call it "consistent-inconsistency." In other words, you must be able to vary your game at will, both as to direction and depth, speed and spin.¹⁶

¹⁶William T. Tilden, Match Play and the Spin of the Ball, with an introduction by Asher Birnbaum (New York: American Lawn Tennis, 1925; reprint ed., New York: Arno Press, 1975), pp. 109-110.

Tilden's approach to the game of tennis was basically intellectual rather than instinctive. Although there were contemporaries such as Norman Brooks of Australia and René Lacoste of France who assiduously studied match game tactics, no one had a more complete overall knowledge of match tactics, strategy, tennis psychology, and stroke production than did "Big Bill." He was the tennis exemplar after whom tennis players the world over patterned themselves. Because his approach to tennis was both cerebral and analytical, his influence on tennis teaching techniques was not insignificant. Tilden's Match Play and the Spin of the Ball has become a classic in its field which has been scrutinized by generations of aspiring tennis players. In it, Tilden defended the rationale behind the Eastern American tennis style and the all-court game as the soundest foundation upon which to attain tennis excellence. There were not many who could argue with Tilden, for the latter's incomparable competitive record appeared to have vindicated his theory. During the height of his career, tennis was still highly elitist, with instruction available in private clubs to those who could afford it. Instruction proceeded along the usual route with descriptive and reason-giving explanations predominating, combined with emulation of the teacher who first demonstrated a stroke technique. The major change was that instructors, influenced by Tilden, taught the Eastern American style.

If Tilden personified the all-court game of the 1920's, then Fred Perry of England, Baron Gottfried Von Cramm of Germany, Ellsworth Vines, and Don Budge of the United States embodied the all-court game of the 1930's. The crucial difference was that Tilden advocated an all-court game with a preference for baseline play, while his successors played the all-court game with a preference for the net, where points could be won more quickly and decisively with the volley. All those mentioned played in the classical Eastern style with the exception of Perry who was an English or continental stylist. Budge and company, while influencing the style of play of competitive tennis players, did not really make a significant impact upon the field of tennis teaching.

The next great tennis personage to influence the development of match play styles was Jack Kramer of the United States. Among his competitive accomplishments as an amateur was the capturing of the United States singles titles in 1946 and 1947, as well as the Wimbledon crown in 1947. He later turned contract professional and became its leading impresario. Kramer's ascendancy in tennis had something in common with the state of industrialism, use of statistics, managerial manipulations, and finally labor union activities

of contemporary American life.¹⁷ The business ethos was an instrumental factor in developing Kramer's business-like attitude toward competitive match play. Kramer developed this particular attitude after meeting Cliff Roche, an automotive engineer from Detroit. Roche convinced Kramer that a strong parallel existed between the game of tennis and the modes of mass production in which the needs of the market rather than that of the consumer dictated production.

Through this analogy, Kramer became convinced that the competitive game should be made up of a series of well-executed strokes operating under an overall plan made in advance like fabricated models. This plan advocated that a forehand should almost always be hit down the sideline to an opponent's backhand unless there is a relatively easy ball to be put away cross-court. If permitted, one should follow the forehand into the net position and be wary of the down-the-line passing shot. Opponents would rarely chance the difficult cross-court passing shot. Once entrenched at net, the volleyer would change the percentages in his favor.

Kramer's business-like approach to tennis has often been called "percentage tennis."¹⁸ It has also been labeled as "power tennis" because it stressed that every serve should

¹⁷Though not mentioning tennis specifically, there is a discussion of the relationship which exists between athletics and the modern industrial state in Joel Spring, "Athletics and the Modern Industrial State," Phi Delta Kappan 56 (October 1974): 114-115.

¹⁸*Ibid.*, pp. 220-221.

be followed into the net, and that all strokes should be hit hard. It was anathema to hit a forehand cross-court or a backhand down-the-line. Using this power-percentage system to hold service, one would wait for a poorly served game by the opponent, when one would make a concerted effort to attack it.¹⁹ However, the notion that "power tennis," which implied the serve-volley technique, was originated by Kramer is fallacious, since Maurice McLoughlin, who antedated Tilden, had been employing it with great effect during the first decade-and-a-half of the twentieth century. A better label for Kramer's play style might be "pressure tennis" for his net game was not built around conditions such as net height or subtlety, but on sheer pressure. He followed all serves into the net, and his service returns or any subsequent groundstrokes were also utilized as a vehicle to approach the net to score the decisive volley.²⁰ It was a rather unimaginative, conventional style of play based upon the notion that Kramer would always be on the offensive, never on the defensive. Kramer also harbored the idea that too much stroke versatility was a distinct handicap to a competitive player. He often told young players that "it is better to have one good shot and use it repeatedly, than to have two or three or a half a dozen--the less you think,

¹⁹Al Laney, Covering the Court: A Fifty Year Love Affair with the Game (New York: Simon and Schuster, 1968), p. 244.

²⁰Metzler, Tennis Styles and Stylists, p. 120.

the better off you are."²¹ This philosophy was diametrically opposite to the all-court, all-stroke, intellectual approach to tennis advocated by Bill Tilden.

Kramer bequeathed this "big game" legacy to his chief disciple, Richard "Pancho" Gonzales, who popularized and refined it during the 1950's and 1960's. Tennis players, world wide, adopted the percentage tennis dictums. With the long rallies of the all-court era eliminated, tennis became a rather dull event for spectators to watch. However, some enterprising sports promoters such as Bill Riordan, Dave Dixon, and Lamar Hunt, saw that tennis could be potentially a highly marketable and profitable product if handled properly. In the late 1960's and early 1970's, these promoters engineered deals with the television media to expose tennis to the general public. In order to make tennis more interesting to spectators, promoters often experimented with slower courts and low-compression balls to restore the long rallies of the all-court days. They hoped that television would do for tennis what it had done for golf. Their hopes were not disappointed. Tennis, which had been the exclusive domain of elitist tennis clubs and the upper stratum of society, now became a public sport. Tennis mania seized the United States in the 1970's. With the advent of popular interest in tennis, the field of tennis instruction also flourished. A plethora of literature, tennis camps, tennis

²¹Laney, Covering the Court, p. 244.

clubs, not to mention a new breed of teaching professionals, came into existence to provide the public with a chance either to play or to learn tennis. Although what those new tennis teachers taught in terms of tennis techniques was not radically new, their approaches to teaching were oftentimes innovative. But these approaches shall be discussed in the ensuing chapters.

CHAPTER III

FOUR EXPLANATION PARADIGMS: THEIR ROLE IN TENNIS INSTRUCTION

Rationale

The purpose of this chapter is to explore the role of the four explanation paradigms traditionally employed in tennis instruction: "descriptive," "reason-giving," "value," and "obligation." In the process, we hope to show why these explanation models have not been used with their greatest effect in bringing about skill acquisition for the tennis student and why a more comprehensive, explanation paradigm is needed for tennis instruction.

Descriptive Explanations

The role of certain explanation paradigms in influencing the development of tennis playing styles and in teaching tennis skills is just now beginning to undergo some modification from the pattern established during the historical evolution of tennis. The greatest innovations in terms of tennis instruction have come in the area of technological innovations and in the growing emphasis in the mental and psychological aspects of the game. Traditionally the teaching methodology which most experienced teaching instructors,

irrespective of professional credentials, have used has been the "show-and-tell, watch-and-praise" sequence of instruction.¹ The instructional sequence is often initiated by an explanation employing the descriptive format during which the teacher recites, step-by-step, what he wants the learner to do, and how he wants the learner to do it.² To reinforce this explanation, the instructor employs modeling and analogies. Finally, to bolster student confidence, the teacher oftentimes gives the student a verbal pat-on-the-back.

To illustrate this process, let us examine a service lesson by Clarence Mabry, who was coach of varsity tennis at Trinity College, San Antonio, Texas, and who is now president of the T Bar M Tennis Ranch, New Braumfels, Texas. He utilizes the following descriptive dialogue interspersed with modeling and analogies to teach the service.

Stand within three feet of center [this is for singles play]. This is to be in better position after the service. Your back foot should be forty-five degrees to this line. Your back foot position is real important here, because it is part of footwork on the serve. You should be able to feel the weight transfer. A line across your toes should go in the general direction in which you are going to serve....The next thing is holding the racket. Let's say that you just put your hand on the top of the racket. It has to be your grip....You have to live with it....the next thing to remember is that the racket head and the weight move together. When the racket is back the weight is back. When the racket is forward the weight is forward. Some of you who are serving look like a guy who is kissing a girl through a picket fence [analogy of a server who leaves his

¹United States Lawn Tennis Association, ed., Official Encyclopedia of Tennis (New York: Harper and Row, pub., 1972), p. 153.

²Ibid.

posterior back and his head forward with no subsequent weight transfer]....You get your arms here [Mabry demonstrates service motion]. This is called the separation. The better the preparation the more consistent the serve is....All serves are hit at full stretch--all good serves have a follow-through....Let's talk about the toss--it's not a toss at all but an extension of the hand....³

The descriptive type of explanation_D with the concurrent usage of analogies and modeling is not restricted solely to teachers of national reputation. Tennis instructors in the Midwest area basically employ the same teaching methodology. James Stocker, the head professional at the Oakbrook Tennis Club in Westmont, Illinois, employed a similar instructional technique for the service to a women's beginner class. He explained the ball toss which is part of the service action in the following manner.

....Hold the ball on the upper part of the fingers--first two or three fingers and the tip of the thumb. Keep your wrist firm and try to put backspin on the ball. If you don't put backspin on the toss, you're flicking the toss....First drop arms down and up. Scratch your back with a high elbow--no hesitation, accelerate through the ball....Use a lot of wrist. ⁴

All during this lesson, Stocker reinforced his descriptive explanation_D with modeling techniques. He would execute an imaginary stroke and have the students mimick the technique. Stocker, himself, explained his teaching style in this

³Service lesson session with Clarence Mabry, U.S.T.A. Tennis Teachers Workshop, Miami Beach, Florida, 4 January 1976.

⁴Service lesson session with James Stocker, U.S.P.T.A. professional, Oakbrook Racquet Club, Westmont, Illinois, 23 March 1976. Hereafter, in the footnotes, this will be referred to as "Stocker, taped service lesson."

manner:

A lot of pros don't understand that verbal explanations are not enough. I'm into a lot of body language. Being half deaf, I feel that I have an acute understanding of people. I can tell when they are down on themselves--there's a mental side of the game. I like to show with my body how I'd like to do it and also with my body what they're doing. 5

In this case Stocker utilized modeling as the vehicle to teach stroke mechanics; he used verbal explanations as a psychological tool to buttress the confidence of the tennis learners. If the student had difficulty executing a particular facet of the service stroke, Stocker usually resorted to an analogy to make the student initially visualize and then perform the proper motion. For instance, most of the students in his class had difficulty conceptualizing the wrist snap. To solve this dilemma, Stocker used a baseball throwing analogy. "Put your racket in your hand and pretend that you're throwing it over the net."⁶

The "show-and-tell, watch-and-praise" method of teaching is by no means restricted to teaching the service stroke. It is applied with equal regularity to the other stroke mechanics. The following tennis instructional dialogue relating to a forehand groundstroke is typical:

....Let's assume that you're standing here waiting for the ball [instructor demonstrates the ready stance]. You've got the proper grip now. I want you to hold the

⁵Interview with James Stocker, U.S.P.T.A. professional, Oakbrook Racquet Club, Westmont, Illinois, 22 March 1976. Hereafter, in the footnotes, this will be referred to as "Stocker, interview."

⁶"Stocker, service lesson."

racket by the throat with the left hand--cradle it with your fingers. We're going to put the forehand together now. It'll be simply, as you take your racket back, you're going to pivot on your right foot. Bring your left foot over, okay. Let's practice that before I toss you the ball, okay [modeling drills]. Go through the swing....Let me demonstrate. 7

A survey of the diverse instructional material relating to tennis including books, magazines, newspaper articles, films, and records seems to corroborate this view that the descriptive explanatory approach combined with verbal analogies and modeling techniques is the teaching methodology most commonly employed by instructors of tennis today.⁸

Reason-Giving Explanations

Although the descriptive explanation is the first instructional tool with which the tennis neophyte becomes familiar, as well as the most widely utilized instrument to effect a change in his skill level, it is not, by any means,

⁷Forehand lesson with Al DeSimone, tennis professional, Lyons Park District, Lyons, Illinois, 7 July 1975.

⁸For examples of descriptive explanation paradigms in tennis literature, see Edwin Faulkner and Frederick Weymuller, Tennis: How to Play It, How to Teach It (New York: The Dial Press, 1970); Bob Harmon, Use Your Head in Tennis (New York: Kennikat Press, Inc., 1950); Helen Hull Jacobs, The Young Sportsman's Guide to Tennis (New York: Thomas Nelson and Sons, 1961); C.M. Jones, Tennis: How to Become a Champion (New York: Transatlantic Arts, Inc., 1968); Rod Laver and Jack Pollard, How to Play Championship Tennis (New York: The Macmillan Company, 1965); Paul Metzler, Advanced Tennis (New York: Sterling Publishing Co., Inc., 1976); William F. Talbert and Bruce D. Old, Stroke Production in the Game of Tennis (New York: J.B. Lippincott Co., 1971); William T. Tilden, How to Play Better Tennis (New York: Cornerstone Library, 1950); Alan Trengrove, ed., How to Play Tennis the Professional Way (New York: Simon and Schuster, 1964).

the sole explicating paradigm used by teachers, past and present. Oftentimes the instructor has recourse to one of the following explanation models: "reason-giving," "value," or "obligation" paradigms. Of these three explicating models the reason-giving variety is probably the second most widely used verbal instructional approach. Reason-giving explanations in tennis instruction, traditionally, have been prevalent in intimate teaching situations involving small groups. One teaching professional characterized the difference between reason-giving and descriptive instructional situations in the following manner:

....Group lessons demand an authoritarian. Without that approach, especially with children, lessons can get out of hand. I feel like a king with his court. With a small group, let's say a drill group of two or three, or with a "private," the reins are a little bit looser. I can become democratic. The rules of tennis are still firm, but I am willing to listen and reason with a small group. You can treat them [students] more as individuals rather than systems. You can become less descriptive....⁹

According to this tennis instructor, then, in a large group situation, the instructor must be a martinet who issues descriptive explanations, which are directives stating what must be accomplished by the students within a given time. Therefore, an instructor makes use of a "prescriptive-descriptive" explanation. Because of the size of the class,

⁹Interview with Tom Dunlop, head professional and manager, Hinsdale Racquet Club, Hinsdale, Illinois, 24 March 1976. Hereafter, in the footnotes, this will be referred to as "Dunlop, interview."

usually four or more, and the limitations imposed by the time factor, the instructor has less opportunity to relate to students personally and to dispense individual attention. Following the maxim of the "greatest good for the greatest number," the instructor reasons that the most economical and beneficial use of the time, in which the greatest amount of learning can take place, involves an authoritarian teacher-pupil interaction utilizing the prescriptive-descriptive explanation approach to instruction. In this situation, individual pupil identities become subordinated to a common group identity, and the instructor often adopts an "assembly-line" mentality. He treats his pupils as undifferentiated raw materials, which have the potential to be converted into a final standardized product, the tennis player.

Reason-giving explanations_D, on the other hand, occur more often in lessons of a private or semi-private nature in which there is more of an informal, democratic atmosphere. In such situations, the instructor has more time to treat each student as an individual entity with a unique personality and temperament. He, in short, has an opportunity to assume the role of a quasi-psychologist, who has an empathetic understanding of the special needs of his students. In this give-and-take, democratic climate, two types of reason-giving explanations are often heard: "accounting for" and "justification" explanations. The first type of reason-giving explanation_D is initiated by the instructor rather

than the pupils. An example of this kind of reason-giving explanation is the following lesson dialogue by Bill Tilden on stroke technique:

Tilden: Why should we curve or spin the ball?

Student: We do it to gain control of our shot and to deceive our opponents. 10

In this instance, Tilden as the teacher, accepts a priori the notion that mastery of spin is a necessary component of a tennis player's skills. Tilden wishes to see whether his student recognizes and can defend the proper reasons why control of spin is an absolute imperative. It is possible that an "accounting for" explanation may relate to something other than a stroke technique, such as a historical question. For example:

Teacher: Why is Rod Laver one of the greatest tennis players of all time?

Student: He has compiled an outstanding competitive record winning the tennis "Grand Slam" twice.

In this example, the teacher already accepts, beforehand, the fact that Rod Laver is one of the immortals in tennis history. The instructor wants the student to verify the reasons why this is factually accurate. The "justification" type of reason-giving explanation, on the other hand, occurs frequently as a result of a student's verbal prodding. For example:

¹⁰Bill Tilden, Match Play and the Spin of the Ball, with an introduction by Asher Birnbaum (New York: American Lawn Tennis, 1925; reprint ed., New York: Arno Press, 1975), p. 2.

Student: Why can't I turn my hips this way [forehand groundstroke]?

Teacher: If you open up your body, you'll lose power.¹¹

In this case, the student doesn't make any prior assumptions about the correctness of body position but is requesting proofs as to which hip position is most desirable in the execution of the forehand groundstroke. Still another example might be the following discourse:

Student: Why did Laver lob the ball at that moment in the match against his opponent?

Teacher: Because the sun is at a bad angle and shines directly into the net player's eyes.

In this case, the student does not make any decisions a priori about the correctness or incorrectness of Laver's tactic. Because he does not know if Laver did the correct thing, he asks the instructor for reasons why Laver would employ such tactics at that moment.

Value and Obligation Explanations

The other explanation_D paradigms which are utilized, although not with the frequency of descriptive or reason-giving explanations_D, are the "value" and "obligation" modes of explications. Such explanation models traditionally have prevailed, like the reason-giving variety, in small group situations, although certain instructors, especially in large clinic types of teaching situations, may use them as a

¹¹Backhand lesson session with Juergen Samimy, head professional and manager, Oakbrook Park District Racquet Club, Oakbrook, Illinois, 28 February 1975.

mass proselytizing tool. An example of a value explanation which serves as an instrument to convince individuals of the utility of a specific tennis teaching methodology can be seen in the response of Joan Ramey, a nationally known tennis coach and teacher, to a question asked during a United States Tennis Association workshop.

Question: What is the value of group teaching and its advantages over private lessons ?

Answer: The values are threefold:

1. A quality professional instructor can give basics to many using the same techniques as he would with one.
2. There is a greater incentive to learn and more fun in group situations.
3. There is better court utilization and less cost than with one-on-one. ¹²

The obligation explanation paradigm, like the value explanation, is used as a psychological reinforcer to stimulate interest and to arouse motivation in the aspiring tennis player. Many tennis teachers use the obligation rationale in motivating a slow pupil who lacks average body and eye-hand coordination. In most instances, one who does not respond well in group situations because of certain physical limitations is advised to take private lessons by the instructor in order to receive individual instruction suited to his capabilities. For such an individual, the following type of obligation explanation_D is often part of the

¹²Lesson session on "effective stroke analysis" with Joan Ramey, U.S.P.T.A. head professional of the Northeast Indoor Tennis Club of Indianapolis, U.S.T.A. Tennis Teachers Workshop, Miami Beach, Florida 3 January 1976.

learning session:

Slow pupil: Do you think it's worthwhile for me to take lessons?

Instructor: Well, you're going to have a few problems, but they can be overcome if you're willing to take the time and take the game a little slower and don't push too hard to avoid frustration. And even if you don't reach the level of tennis you want to attain, you ought to learn tennis because it helps you in other aspects of life....You develop rhythm, and you learn other sports a lot easier. It's like ballet, because it teaches you balance and rhythm. 13

Obligation explications, as an integral part of tennis instruction, often extrapolate certain values from the sport which can be projected beneficially to one's particular life circumstances.

The explanation_D paradigms discussed in the chapter comprise the usual verbal, instructional repertoire of the tennis teaching professional. There are two qualifications associated with the aforementioned explications as applied to tennis instruction. The first is that verbal tennis instruction, via the previously alluded to explanatory paradigms, is most often incorporated into adult rather than children's tennis classes. Children should have relatively minimal instruction through explanation models. The reason for this has been made clear by Dennis Van der Meer.

¹³"Stocker, interview."

I don't like to have kids in my clinics, for them, there are summer camps where they can be with their own peer groups. Adults have a different learning process. Instead of learning by rote and by discipline and by imitation, they learn "intellectually." 14

The second qualification has been discussed in detail.

Adult beginners, whether in a private or group situation, are first initiated into tennis through the descriptive explanations, coupled with modeling and analogies. However, it is most often in a private or small group situation, where a more informal atmosphere exists, that some other types of explication models, especially the reason-giving variety, are employed with any regularity. The four explanation paradigms discussed are the major ones as far as tennis instruction is concerned; however, they comprise only a part of the seven major categories of explanations available.

Changes in Contemporary Tennis Instruction

As has been mentioned earlier, although the kinds of explanation paradigms utilized in tennis teaching have not changed appreciably during the evolutionary history of the game, modern tennis instruction has been influenced and modified to an extent by certain contemporary events. The effects of these events are just now beginning to be felt in the field of tennis teaching. The first of these events is

¹⁴Dennis Van der Meer and Murray Oldernam, Tennis Clinic: Play the Tennis America Way, with a foreword by Billie Jean King (New York: Hawthorne Books, Inc., 1974), p. 14.

the emergence of the modern industrial-technological state with the emphasis on a business-minded ethos. As a consequence, many ideas, techniques, and machinery used in our Gesellschaft society are beginning to be implemented in the field of tennis instruction. One pro has described the effects of the contemporary business milieu on tennis teaching:

When I learned tennis, it wasn't so much a technical explanation. It was a general picture of what a tennis stroke looked like....Mostly I learned by example [modeling]....

[Today] instruction is more mechanical. It's more of a mechanical-logical approach. It's caused by the tennis players themselves [tennis aficionados] who demand that they become better faster. It's the mass of players who rule the methods that the pro uses. The game has become much more technical. It's become a science with the use of videotapes. 15

Certain social institutions, influenced by the efficient organizational techniques of the modern industrial state, have also begun to contribute to tennis instructional methodology. A Chicago teaching professional explains these contributions in the following manner:

College physical education departments involved in tennis teaching have been helpful in introducing instructional aids, or as many tennis teachers describe them, "gimmicks" to facilitate the teaching of tennis, especially in terms of group instruction. 16

These so-called "gimmicks" involve, among other things, specific techniques of effective group instruction and

15"Dunlop, interview."

16Interview with Bob Huang, head professional and manager, Midtown Tennis Club, Chicago, Illinois, 23 April 1976.

organization including a plethora of various class formations, self-programmed methods of teaching and interest-motivating games for group participation. John Conroy and Eve Kraft, two innovative teaching professionals, have employed these organizational techniques with great effect outside of the customary tennis setting of tennis clubs, within a neighborhood community in Princeton, New Jersey.¹⁷ Conroy and Kraft have demonstrated that tennis can be made an integral part of a typical community's social and recreational life vying with other sports such as baseball, football, basketball, and swimming. Tennis need not be restricted solely to the country club set or members of an elite tennis playing fraternity.

The second modern trend which has influenced tennis instruction is the changing concept of education in general. There is now an increasing emphasis on the sociological and psychological aspects of education. That is, an educational institution should be concerned with more than the inculcation of knowledge or skills in the student. An important function of education is to promote the proper psychological and emotional disposition of the student. Carl Rogers, a prominent psychologist and educator, feels that the student

¹⁷John Conroy and Eve Kraft elaborated upon the "Princeton Plan" in a clinic session held in January of 1976; clinic session on "Techniques of Effective Group Instruction" with John Conroy and Eve Kraft, U.S.T.A. teaching professionals, U.S.T.A. Tennis Teachers Workshop, Miami Beach, Florida, 5 January 1976.

learns best within an educational climate which fosters a sense of well-being and security. He states, "when threat to the self is low, experience can be perceived in differentiated fashion and learning can proceed."¹⁸ With this in mind, it is apparent that there would be a reassessment of values in the field of tennis instruction as well. Some teaching professionals are beginning to adopt a quasi-Pestalozzian viewpoint regarding the importance of the student's psychological and emotional state as a prelude to the learning process. In essence, such instructors feel that in order for learning to take place, the student must feel emotionally secure. Unlike the Pestalozzian philosopher, the teacher of tennis does not assume the role of a parent-surrogate.¹⁹ However, it is up to the teacher to foster a sense of security by instilling the proper motivation and values within his students. Bob Breckenridge, the head professional and manager of the Arlington Tennis Club, has commented upon this important facet of learning.

I feel that the student must succeed at whatever level he is. He may be the worst beginner you've ever had, but if he can get turned on, then you can get turned on. It's a kind of snow-ball kind of thing. I feel that the student must have fun. ²⁰

¹⁸Carl R. Rogers, Freedom to Learn (Ohio: Charles E. Merrill Publishing Co., 1969), p. 161.

¹⁹Gerald Lee Gutek, A History of the Western Educational Experience (New York: Random House, 1972), p. 205.

²⁰Interview with Bob Breckenridge, head professional and manager, Arlington Racquet Club, Arlington, Illinois, 26 March 1976.

Alan Carvell, a Midwest pioneer in the field of tennis instruction, believes that the interpersonal relationship between the teacher and the student is the key ingredient to effective learning. He states the following:

The important thing in learning to be a teacher and to play tennis is to get the importance of the pupil, and to emphasize the idea that you also are trying to learn from the pupil, and hopefully that he'll absorb something from you. So it's very humanistic philosophy as far as tennis is concerned.

The idea of a humanistic approach is that the person's feelings are the most important. I want my logic to be your feelings and your feelings to be logic. [The student must feel that the goals sought by the instructor are in his best interests; consequently, such goals are desirable for the student as well.] The process of getting that to happen depends upon the interpersonal relationship between the teacher and the student. Mechanics, anything that will motivate the student to think and get excited and become involved in what he's doing, is the secret. The science and mechanics are less important than what turns a person on--motivation. I want to create an atmosphere of learning--a thrill of hitting the ball. 21

To create an emotionally secure feeling within the individual, tennis teachers may resort to different techniques or gimmicks, as they are often called. Dennis Van der Meer often makes use of incisive humor. For example, he might say the following to a beginner's group composed of older men and women.

If I were a dictator, I would never let anybody play tennis until he was thirty years old because of the tremendous accomplishments he could anticipate....

²¹Interview with Alan Carvell, U.S.P.T.A. professional, Alan Carvell Tennis Academy, Chicago, Illinois, 26 March 1976.

....I laugh when anybody says to me, "I wish I'd learned as a kid." I say "You're crazy. The luckiest thing that could have happened to you is that you have only now discovered the game. Because you have the prospect of perpetual improvement. What other occupation or activity at the age of fifty offers such prospects? Because if you don't improve your technique, you'll decline. Five years from now you won't be able to run around your backhand."

For me, what is my challenge competitively? I have to find a new love in the recreational field. Tennis for me is going down hill. Once one is a competent competitive player as in the case of Van der Meer, the future only promises a steady decline of skills. 22

Yet another approach to improving the emotional climate of learning was introduced by W. Timothy Gallwey. His book The Inner Game of Tennis which came out in 1974 emphasizes the paramount importance of the philosophical-psychological aspects in the mastery of tennis skill. When the book first came out, its approach to tennis instruction was viewed as being perhaps philosophically interesting, but lacking practical value. One critic offered this judgment of Gallwey's book.

As for me, the reviewer who is exhorted to abandon the judgmental process, I can detect two immediate uses for the book. One is to change my life and follow the Way [Zen], although I suspect that the kind of mastery Gallwey advocates is no simple achievement. The other is to give the book to my opponents, for it will surely wreck their games. 23

Now, however, the implications of this book are being considered as having definite, pragmatic application potential. One of Gallwey's major contentions in the book is that any

²²Van der Meer and Olderman, Tennis Clinic, p. 2.

²³P.S. Prescott, review of The Inner Game of Tennis, by W. Timothy Gallwey, in Newsweek, 10 June 1974, p. 93.

aspiring tennis player must be cognizant of the fact that there is a physical and psychological bifurcation which dictates how well he will be able to execute any tennis technique. Gallwey has described his "Zen" tennis philosophy in the following way:

We have arrived at a key point: it is the constant "thinking" activity of self 1, the ego-mind, which causes interference with the natural doing process of self 2. Harmony between the two selves exists when the mind itself is quiet. Only when the mind is still is one's peak performance reached. ²⁴

According to Gallwey, one's mental component or ego-self must not make negative value judgments which will impair the ability of the body to function to its optimum. For example, the ego-mind must not berate one's self if an attempt at a tennis stroke goes askew. Comments, such as "that was a bad shot on my part," only serve to make the body tense, and consequently, even less efficient. Needless to say, Gallwey feels that the instructor should refrain from making value judgments. He should content himself with working on student "awareness." For Gallwey this is translated as knowing where the ball is, and where the racket head is.²⁵

The full impact upon tennis instruction of the technological milieu and of the educational emphasis on the psychological and emotional well-being of the learner is yet to

²⁴W. Timothy Gallwey, The Inner Game of Tennis (New York: Random House, 1974), p. 31.

²⁵Ibid., p. 40.

be felt. Whether tennis will be appreciably affected by such changes in technology and the educational emphasis on the proper emotional disposition of the learner remains open to speculation. We feel that tennis instruction can be improved greatly by making use of these new trends.

Instruction versus Meta-Instruction

In this section, we shall make a distinction between two levels of teaching in tennis: "instruction" and "meta-instruction." We shall also examine, within the field of tennis instruction, the changing functions of certain explanation paradigms as well as the role of "surrogate" explanations.

The field of professional tennis instruction appears to be dichotomizing to "instruction" and "meta-instruction." "Instruction" can be distinguished from its "meta" counterpart, in that it refers to a teaching relationship between a tennis instructor and his pupils, while "meta-instruction" refers to a teaching arrangement between a master teacher of tennis to potential teachers of tennis.

"Instruction" has traditionally employed the four explanation paradigms which have previously been cited: descriptive, reason-giving, value, and obligation. However, certain trends are just now beginning to manifest themselves because of the historical forces which have applied the dimensions of psychology and technology to tennis instruction. In the teaching situation between the instructor and the

student, there appears to be a trend toward less reliance upon the descriptive explanations for bringing about the acquisition of skills on the part of the neophyte. If a student has difficulty in learning a particular stroke technique through descriptive explications, the instructor may now resort to alternative, "surrogate" explanations such as modeling or analogies. An example of modeling would involve the technique of one teaching professional who stated, "if you want a student to learn something [a stroke skill], you first explain it to the person. If that person still keeps misunderstanding, don't keep talking to that person. Go up and show him what you want him to do."²⁶ An advocate of the analogies approach is Belitz-Geiman, a well-regarded Soviet coach who makes use of Soviet sports analogies to facilitate the teaching of tennis. He, for instance, would refer to shot-putting, throwing the javelin, and playing soccer in order to explain the serve, an approach shot, and footwork.²⁷ The instructor, in addition to employing surrogate explanations, often has access to sophisticated technological equipment such as films or videotapes which allow the student to see and evaluate his own performance in learning a skill [another modeling stratagem]. When one resorts to videotape as a source of

²⁶Interview with Juergen Samimy, head professional and manager, Oakbrook Park District Racquet Club, 28 February 1975.

²⁷Dennis Van der Meer, "The Russian Approach," World Tennis 20 (March 1973): 52.

self-evaluation, however, this individual is involved in the paradoxical situation of modeling for himself. Although there appears to be a trend toward less employment of descriptive explanations in instruction, "reason-giving," "value," and "obligation" may increase in use, for they can serve as tools to promote psychologically positive feelings in the tyro, both in private lessons and in large class situations.

The use of many of the explanation_d paradigms will proliferate on the level of "meta-instruction." Master tennis teachers such as Van der Meer and Vic Braden will have recourse to certain explication models to show other instructors how to improve their teaching techniques. In addition meta-instructors will use certain explication models such as of the "reason-giving," "value," and "obligation" type to win over other teachers to their particular teaching philosophies. For example, a master teacher might say the following: "the reason you should follow my technique of teaching is such and such, or the advantage of my teaching method over my competitor's methods is such and such, or my philosophy of teaching is good because of such and such reasons."

Conclusion

A more comprehensive explanation paradigm is needed to facilitate the teaching of tennis skills to the neophyte. The reason for this is that instructors vary greatly in

their teaching methodologies. Most tennis teachers follow no clear-cut, precise instructional sequence. Some instructors of tennis heavily employ the various explanatory paradigms and surrogate explanations in their lessons, while others feel that students learn best through a repetitive process of hitting an endless number of tennis balls with as little instructional dialogue as possible. The next chapter will present this new explanation model.

CHAPTER IV

AN EXPLANATION PARADIGM FOR TENNIS INSTRUCTION:

A DIFFERENT POINT OF VIEW

Rationale

In the preceding chapter, we made a distinction between "instruction" and "meta-instruction." At the "instruction" level, it has been our experience to notice a decreasing employment of "descriptive" explanations with the concurrent increase in the usage of "surrogate" explanations, such as analogies and modeling. The use of "reason-giving" and "value/obligation" explanatory models was also discussed in their relationship to certain psychological/emotional components of the learning process, especially at the "instructional" level. We also suggested that the use of "reason-giving" explanations would proliferate at the "meta-instructional" level for the reasons previously discussed.

Because the whole field of tennis teaching, "instructional" as well as "meta-instructional," is currently undergoing a re-evaluation and modification in teaching methodology, it is necessary that a more comprehensive explanation paradigm be developed to accommodate the changes brought about in tennis teaching by our contemporary society.

Another reason that a more comprehensive explanation paradigm is needed is that the four kinds of explanation models traditionally used in tennis instruction--"descriptive," "reason-giving," "value," and "obligation"--have proved to be inadequate to handle all the teaching contingencies occurring in tennis. Moreover, the instructor has even failed to exploit the four explanation paradigms at his disposal in the most judicious manner to bring about the proper climate conducive to the effective learning of tennis skills. Since "surrogate" explanations such as "analogies" and "modeling" are playing an increasing role in present day tennis instruction, we shall now discuss them in greater depth.

Models and Analogies

Before we proceed with an in-depth discussion of analogies and models, we should make a distinction between the terms "analogy," "comparison," and "contrast," since they are often used synonymously. When an individual compares things, he is seeking to find both similarities and differences. In the case of contrast, an individual emphasizes the differences. On the other hand, when he makes an analogy between things, he is looking for parallels or similarities.¹

Models, like analogies, are used to discover

¹Peter Achinstein, Concepts of Science: A Philosophical Analysis (Baltimore: The Johns Hopkins Press, 1968), p. 208.

similarities between various things. In the ensuing discussion, we shall not span the entire gamut of models and analogies. We shall endeavor to cover only those "surrogate" explication paradigms which are applicable to tennis teaching. To begin with, all models or analogies share certain characteristics which may be summarized as follows:

1. Both models and analogies are representations of something else which may be designated as X. The model or analogy will be designated as Y.
2. The representations of X are not intended to be either literal or complete but rather "indirect."
3. Models and analogies seek to make X more easily understood, because such representations are familiar and, consequently, more easily grasped. 2

These shared characteristics of models and analogies will become clearer as we proceed further into the discussion.

We shall discuss analogies first. One of the major purposes in drawing an analogy between two things, X and Y, may be to illustrate X in a striking or non-conventional way. One is really striving to create a better understanding of X through the analogy of Y.³ In order to create this improved understanding, analogies draw out similarities between things. The similarities which analogies seek to uncover between two things are generally one of three kinds. All three of these similarities which analogies seek to draw out may be employed by a tennis instructor. The first type

²Ibid., p. 257.

³Ibid., p. 207.

of analogy seeks to find parallels between X and Y on the basis of similar "physical principles." For example, the same scientific physical principles which insure proper mobility on the tennis court are identical to those which insure proper mobility in track events. The second type of analogy draws parallels between two things according to similarities in geometrical configurations. For example, one might see similarity in geometrical form between an acrobatic, lithe tennis player and a startled springbok. The third kind of similarity which analogies uncover is that of similarity in function or role. An example of this is the anatomical role of the tennis player's knees. To insure stability and balance, they act in a vein similar to shock absorbers in a car.⁴

In many instances, an instructor will resort to "analogies" especially at the "instruction" level of the tennis learning sequence. This is true especially during the later phases of the instructional sequence. During the initial stage of instruction, the instructor has already, perhaps unsuccessfully, attempted to impart tennis skills to the beginner through descriptive explanations_p. The neophyte has perhaps been able to conceptualize what must be done to master a particular tennis skill, but he has not been able to use that concept on a physical level. For example, the student understands the concept of the "backhand

⁴Ibid., p. 205.

groundstroke" but cannot physically execute that stroke. Therefore, in the later phases of instruction, the instructor might conceivably resort to a "frisbee throwing" analogy to help the student learn that particular skill. The "frisbee throwing" analogy is not a literal representation of the backhand. The instructor is attempting to describe a motion which is familiar to many a beginner, and which can help him physically master the backhand groundstroke. This frisbee analogy seeks to find parallels between X and Y, the frisbee motion and the backhand groundstroke motion, on the basis of similar physical principles. The instructor might phrase the analogy in the following manner.

The arm motion for a backhand is almost exactly like that for a frisbee toss. To throw a frisbee, you should stand sideways to the target, draw your arm close to the body, swing forward with your arm straight and release the frisbee in front of your body. Your knees stay bent and your body rotates as the throw is made. If you are a proficient frisbee thrower, you'll also have a long follow-through to help you get the proper direction. Try the uncoiling action of the frisbee throw on your backhand, and you'll find that it will help you keep your elbow close to your body [putting less strain on your arm] and will help put your racket out in front where it belongs for a clean well-timed stroke. ⁵

The use of analogies is, by no means, restricted to the instruction of the beginning tennis players. Even Wendy Overton, who is one of the world's leading women tennis players, may improve her skills through instructional techniques utilizing analogies. Overton, at one stage in her

⁵Dave Engleberg, "Swing at Those Backhands with a Frisbee Toss," Tennis 10 (March 1975): 21.

career, was having difficulty hitting a forceful serve; she was vulnerable to an attacking service return. Her coach, Dennis Van der Meer, found that she was raising her service arm too far above her head instead of cocking her elbow in a lower "throwing position" which would be conducive to more power. To rectify this faulty service action, Van der Meer suggested that she try to imagine that she was standing in front of the former basketball star Wilt Chamberlain, who is seven feet tall, and to picture that she was grabbing him by the throat with the left hand and punching him with the right hand.⁶ Through this analogy, her service elbow would cock in exactly the proper position to insure maximum leverage for a powerful service.

Two final points should be mentioned on the subject of analogies. The more similar are two things in all respects, the less likely it becomes for one to speak of an analogy existing between them.⁷ It would, for example, be somewhat pointless when referring to an analogy of geometric forms to discuss the parallels existing between the shape of the badminton racket to that of a squash racket. The similarities are readily discernible even to one who is not actively seeking parallels. An analogy, in order to be striking and effective, should involve somewhat dissimilar things; yet,

⁶Dennis Van der Meer, "Wendy Overton Corrects Her Serve," World Tennis 21 (May 1974): 18.

⁷Achinstein, Concepts of Science, p. 207.

the things cannot be too dissimilar, lest the analogy be unfathomable. That is, if one is attempting to explain something through analogous examples, the analogies, to be effective, must be familiar to the recipient of the explanation. For example, it would be more effective when dealing with an analogy of physical principles to exploit the similarities between the tennis service motion and the throwing motion of a baseball pitcher rather than the parallels existing between the tennis serving action and a jai-alai player's serving motion. Most American people are not familiar with the sport of jai-alai.

The other kind of "surrogate" explanation used in tennis teaching is modeling. Models can be separated into two broad categories: the first is the "theoretical" and the second is the "representational." In the field of tennis instruction, it is the second category which is more applicable. A "representational" model in its most general sense is a three-dimensional reproduction of an object; if one were to examine this replication, one could ascertain certain truths or facts about the object it represents.⁸ This "three-dimensional" aspect of a representational model distinguishes it from things such as maps, pictures, and diagrams which are two dimensional in perspective.⁹ Representational models can be divided into the following four

⁸Ibid., p. 209.

⁹Ibid., p. 210.

subcategories: true models, adequate models, distorted models, and analogue models. To facilitate our ensuing discussion of these models, we shall refer to the object represented by the model as the "prototype."¹⁰ The chief characteristics of these models, along with some illustrative examples, are as follows:

1. True models: These can be identified by the fact that characteristics of the prototype are replicated in the model to a set scale (with regards to a specific quantity such as "distance," "mass," or "velocity") so that by studying the model one can understand the characteristics of the prototype. An example of this would be a scaled housing project created by an architect.
2. Adequate models: These can be identified by the fact that only some of the characteristics of the prototype are replicated in the model; so that by studying the model, not all of the characteristics of the prototype would be discernible. An example of this would be a human skeleton replica.
3. Distorted models: These can be recognized by the fact that all (or some) of the characteristics of the prototype are reproduced in the model, although different scales (with respect to a given quantity) are used, so that by examining the model one can determine the corresponding characteristics of the prototype. An example of this would be a model airplane in which the length might be reduced by a factor of 100 and width by a factor of 50.
4. Analogue model: These models can be identified by the fact that the characteristics of the prototype are not themselves replicated in the model. Rather, an analogy or parallel is drawn between two unlike things, X and Y, for example. Y is considered as representing X by serving as the analogue or model for it. In the way of an illustration, an electrical circuit can be treated as a model for an acoustical system. The analogue model Y is considered as

¹⁰Ibid., p. 209.

something to be studied and experimented upon so that calculations can be made upon it before actually studying or experimenting upon X. ¹¹

Sometimes an analogue model is considered as synonymous with an analogy of the type previously discussed in this chapter. These analogies previously mentioned comprise one separate category of surrogate explanations in that one of their chief characteristics is their "verbal" nature. That is, these analogies need only be described. Analogue models, on the other hand, are really true models because of their three-dimensional or representational aspect and, as such, comprise a second category which is distinct from "verbal" analogies.

In terms of tennis teaching, only the "true model" has any particular relevance. However, the model utilized in tennis instruction is not a perfect example but a variation of the "true model." A videotape machine, a recent outgrowth of the technological revolution in tennis instruction, is probably the best example of a device which utilizes this variation of the "true model." Through the use of the videotape, the neophyte or even advanced tennis player sees reduced images of himself or of other players, at various levels of skill competence, striving to master a particular tennis technique. By examining these reduced models, the player learns how to correct self errors and how to master the technical skills of the highly skilled tennis

¹¹Ibid., pp. 209-210.

player, who is, in this case, the tennis prototype. The videotape machine is not technically a "true model" because it utilizes two-dimensional figures. Yet, it does contain elements of the true model, for it utilizes a two-dimensional representation of the three-dimensional model. The examiner or student is, therefore, vicariously involved with a three-dimensional model through the use of a two-dimensional picture.

There is one kind of modeling widely employed in tennis instruction which does not appear to fit into one of the subcategories of representational models. A tennis instructor often uses himself as a tennis exemplar or model for the students to emulate. This type of modeling differs from the other kinds of representational models in that the instructor, although certainly three-dimensional, is neither something which is fabricated, nor is he something which can be reduced to a set scale as in the case of a "true" model [a scaled engineering bridge, for example]. The type of modeling which occurs when an instructor utilizes himself as the object of emulation is common throughout the various stages of instruction.

We should, at this point, clarify one other point concerning the use of the term "surrogate" to describe analogies and modeling. They are "surrogate" only in the sense that they were not included as part of the explanation models found most commonly in philosophical works. They are, in fact, legitimate explanatory tools if we take into

account the major purpose and function of any explicating paradigm--to enlighten and to elucidate.

This completes our discussion of analogies and modeling as applied to tennis instruction. We shall now proceed to one of the major purposes of this dissertation--our proposal for a more comprehensive explanation paradigm for tennis instruction.

A Comprehensive Explanation Paradigm for Tennis Instruction

In discussing a new, all-inclusive explanation paradigm for tennis teaching, it is important to keep in mind the distinction between "instruction" and "meta-instruction." We will endeavor to present a comprehensive explanation paradigm appropriate for both tennis instructional levels. Our comprehensive explanatory models are of an eclectic nature, utilizing a number of explanation models, surrogate types as well, all arranged in a particular sequence geared toward a more logically cogent acquisition of tennis skills and knowledge.

Instruction

When dealing with the tennis teaching-learning relationship at the "instructional" level, the instructor employs a three stage instructional sequence to impart the requisite skills to the tennis playing aspirant. The first two stages of instruction, "Ignorance to Enlightenment" and "Enlightenment toward Practical Application" respectively,

involve a learner who is yet struggling to acquire the rudimentary skills and techniques of tennis; while the third stage of instruction or the "Efficiency-Inefficiency-Efficiency" phase has applicability to this same learner at a more advanced stage in his tennis learning experience, when he has already acquired the basic, foundational skills, but desires to either improve or to modify those that he possesses.

We shall now discuss our comprehensive explanation paradigm for the individual who is passing through these three stages of learning at the "instructional" level. We shall first list the three stages of instruction and then mention the kinds of explanation models appropriate to the various stages. During the first stage of learning, "Ignorance to Enlightenment," the instructor first employs "value/obligation" explanations followed by "descriptive" explications reinforced by "modeling" techniques. The second phase, "Enlightenment toward Practical Application" is characterized by the instructor's use of "reason-giving" explanations coupled with an increasing dosage of "modeling" and "analogies" which are forms of "surrogate" explanations. During the last stage of instruction, "Efficiency-Inefficiency-Efficiency," the teacher makes judicious use of "reason-giving" explanations, but for a different purpose than for stage two. Let us explore these three stages in depth.

During the initial phase of instruction, "Ignorance to

Enlightenment," the student has had very little or perhaps no previous contact with the game of tennis. The student approaches the learning session, be it private or group, with some degree of apprehension. It may be that he or she has had very little prior experience with athletics or perhaps the contact which has been previously sustained has been harrowing because of the student's lack of physical coordination or psychological motivation. Before learning can take place for this particular individual, it is necessary that the instructor create the proper emotional climate conducive to the learning of the tennis skills. In order to do this, the instructor, whether involved in private or group teaching situations, should begin the lesson with some kind of value or obligation explanation which gives a rationale for learning tennis. He should stress that tennis offers more than the acquisition of certain physical skills such as stroke dynamics: it has certain concomitant values as well which lie outside of the direct tennis experience of the learning session. An example of a "value" type of explanation which stresses these attendant values is as follows:

I urge you--play tennis! Tennis is the most valuable sport that any individual can learn, even more so than golf. It is the most universally played of all athletics, and its rules are the same the world over. A good game of tennis is the open-sesame on every continent and in almost every nation. Language is no barrier to tennis players, since whether a ball is out or in can be seen and understood without spoken words....The tremendous increase in public courts in almost all cities has taken the game away from the classes and put it in

the hands of the masses, which is a healthy and splendid thing in every way....The steady growth of tennis courts at schools and colleges, together with increase in the number that provide professional coaching for their students, shows that at last the importance of the individual sport for the adult life of the citizen of the future has been recognized by our educators.

Certainly the greatest benefit that tennis gives its followers is the means to keep physically fit. It is a game that can be played practically from the cradle to the grave....¹²

Sometimes, the student has to have his confidence positively reinforced before the learning of tennis skills can take place. Students, especially those with a past history of negative athletic experiences owing, perhaps, to a lack of physical ability, need to gain some semblance of self-confidence before learning can occur. It is at this stage of a student's learning experience that an approach such as that advocated by Timothy Gallwey in his The Inner Game of Tennis may help. Let us summarize his position: The teacher must create for the student a teaching-learning climate which suspends all negative value judgments about a student's acquisition of a particular tennis technique. All students have to contend with a physical and psychological dichotomy. One's psychological side must not make negative value judgments which will detract from the ability of the physical side to properly execute a particular stroke technique. The student should refrain from anxiety-laden self-

¹²William T. Tilden, How to Play Better Tennis: A Complete Guide to Techniques and Tactics (New York: Cornerstone Library, 1950), pp. 5-6.

criticisms such as "how could I miss such an easy shot?" which make the body tense and, consequently, physically inefficient. Needless to say, the teacher should not offer adverse criticisms which would contribute to a poor emotional state on the part of the learner. The instructor would more profitably spend his time in teaching racket control or racket awareness.¹³ The notion that the proper emotional state is a prerequisite to successful learning is not iconoclastic but is a quasi-Pestalozzian, educational view.¹⁴

The next phase in stage one involves the use of descriptive explanations_D by the instructor. As has been mentioned previously, according to tennis teachers such as Dennis Van der Meer, descriptive explanations are necessary at this stage because adults first approach the learning of tennis skills through an intellectual process. Children, on the other hand, better learn tennis skills through imitation and modeling. One must bear in mind, however, that explanations have a dual function: active and passive. There is an "activity" or "process" involved when an individual physically engages himself in explaining something to someone. The passive function of an explanation can best be defined as that "something" which is explained to someone. This

¹³For a more detailed account of Gallwey's "Zen" philosophy applied to tennis, see W. Timothy Gallwey, The Inner Game of Tennis (New York: Random House, 1974).

¹⁴Gerald Lee Gutek, Philosophical Alternatives to Education (Ohio: Charles E. Merrill Publishing Co., 1974), p. 139.

passive role of an explanation has to do with the nounal form of "explaining_T" or "explanations_D of something for someone." For example, in the teaching-learning interaction, a definition of a particular skill such as a fore-hand, given by an instructor, represents the conceptual or passive function of an explanation. The process or activity function of explaining is broader than the concept of explanation. During this initial stage, the student either is totally ignorant of or is only slightly cognizant of the procedures in executing a particular stroke technique. Through descriptive explanations_D, the instructor first inculcates his student(s) with the proper concept or definition of what is to be mastered. Therefore, at this point, the student attempts to intellectualize the components of a particular stroke technique by mentally absorbing the instructor's descriptive explanations_D. During this first stage of instruction when descriptive instructions are issued by the tennis teacher, the instructional atmosphere is decidedly authoritarian in nature. That is, the instructor, in a straightforward manner, states the conditions which must be satisfied in order for the student to acquire a subsequent skill. The instructor does not, at this juncture in the learning sequence, engage in a vis-a-vis, democratic discussion with the students concerning the why's-and-wherefore's of a particular stroke technique. The students don't really know enough about stroke dynamics to understand the physiological or scientific reasons why a stroke is

executed in a particular way. After they have acquired the rudiments of a particular stroke, they can more readily understand and appreciate the underlying principles behind stroke analysis. At this point, the students are more interested in reasonably replicating the stroke under discussion. They are more concerned with "how" to perform a stroke rather than "why" a stroke is performed in such a manner. Therefore, the instructor issues a "prescriptive-descriptive" explanation detailing the concept which is to be learned by the tennis students. The descriptive explanation_D employed by the instructor stipulates certain logically necessary conditions which establish, with precision, the perimeters of the concept which is being taught. An example of a descriptive explanation_D, which might be employed by a tennis instructor to stipulate the conditions fulfilling a backhand groundstroke concept, is as follows:

1. There must be an attempt to propel a ball with a tennis racket toward the opposite side of the court; otherwise, it may be just a simulated swing.
2. The swing must go in a lateral motion with the hitting arm going away from the body and the back of the hand turned forward, otherwise the stroke might be categorized as a forehand with the stroke arm coming across the body and palm turned forward.
3. The ball must bounce at least once before being struck by the racket, for if it were hit before the bounce, the stroke would be categorized as a volley.

If any one of these three logically necessary conditions is not stipulated by the instructor, then the backhand groundstroke concept is incomplete. If the instructor cites these three conditions, then he has rendered a logically

sufficient explanation of the backhand groundstroke concept. That is, these three conditions represent all that is usually required for the definition of a backhand groundstroke. It is important to keep in mind that the instructor enumerates these logically necessary conditions so that the students acquire an "understanding" of the concept which is being explicated. The instructor is not yet overly concerned with the actual physical execution of the groundstroke.

During this first stage of instruction in which the descriptive explanation_D plays such a paramount role, the tennis teacher does not stop with the logically necessary and sufficient conditions defining the skill concept to be mastered. Explanations, it must be remembered, have an activity function. The instructor in the explanatory dialogue must be concerned with the conditions governing the explanatory activity. These conditions are of two different sorts: empirically necessary or empirically sufficient.¹⁵

Both empirically necessary and empirically sufficient conditions serve two functions during the explanation activity. The first function involves bringing about an understanding of a particular concept such as a backhand groundstroke. The second function involves actually bringing about the execution of the skill embodying the concept. In

¹⁵For a more detailed discussion of "empirically necessary" and "empirically sufficient" conditions, see chapter two, pp. 12-15.

order to better understand the role of these two conditions during the explicating dialogue, we shall re-examine the conceptual definition of the backhand groundstroke.¹⁶

In the early stage of instruction, "Ignorance to Enlightenment," the tennis teacher has attempted to bring about an "understanding" of the backhand groundstroke concept through the use of logically necessary and sufficient conditions. For most individuals, understanding is successfully brought about through the use of these logically necessary and sufficient conditions. Sometimes, however, this understanding is not achieved for some students. For various reasons, certain students have been unable to grasp the concept of the backhand. Some students, for example, have had no prior experience in athletics in general or in tennis specifically; consequently, the backhand groundstroke concept remains a vague notion. In order to help these special students gain an understanding of this skill concept, an instructor may resort either to empirically necessary or to empirically sufficient conditions in his explanatory discourse. For example, the instructor may say that in order to understand the backhand groundstroke concept, it is necessary that a student study a "frisbee throwing motion" which is analogous to the motion used in the backhand. If this one empirically necessary condition is all that is required to bring about an understanding of the concept,

¹⁶See pp. 101-102.

then it is also an "empirically sufficient" condition. Suppose, however, that still other empirically necessary conditions must be introduced by the instructor to create understanding on the part of the student. For example, the instructor might stipulate conditions related to modeling or perhaps reading a book on tennis strokes. If it takes a combination of all of these empirically necessary conditions to induce understanding on the part of the students, then all the conditions collectively are empirically sufficient for understanding the backhand groundstroke concept. Each of the conditions, individually considered, is necessary but not sufficient to bring about understanding of the concept.

The second function of empirically necessary and empirically sufficient conditions is to bring about the actual physical execution of the skill representing the backhand groundstroke concept. During the early stage of instruction, a "parallel" state exists between the logically necessary conditions regulating the definition and the empirically necessary conditions governing the explanatory dialogue. That is, the logically necessary conditions defining the backhand groundstroke concept are also some of the empirically necessary conditions needed to translate the backhand groundstroke concept into the physical execution of that skill. This "parallel" state occurs because the empirically necessary conditions governing the explication activity are as precise and as accurate as the logically necessary conditions regulating the definition. During this

parallel state, the empirically necessary conditions which mirror the logically necessary conditions cannot, in themselves, act as the instructor's tool translating the backhand groundstroke concept into the physical execution of the skill. The instructor must introduce other empirically necessary conditions which go beyond the scope of the logically necessary conditions and also of the parallel empirically necessary conditions. This happens because explanations as an activity are broader than explanations in themselves. Consequently, other empirically necessary conditions relating to "cause-and-effect" which are not part of the definition may be cited by the instructor. For example, he may cite empirically necessary conditions involving physical dynamics such as weight transference, execution of spin, and correct footwork. These additional empirical conditions when added to the earlier ones act as the instructor's tool translating the backhand tennis stroke concept into the actual physical execution of the skill. These conditions, while individually empirically necessary, are collectively empirically sufficient for converting the concept into the skill for many individuals.

The instructor must be aware during this early stage of instruction that the use of empirically necessary and sufficient conditions as a tool for translating a skill concept into the actual physical execution depends upon the personal needs and characteristics of his students. Some students may achieve the backhand skill proficiency through

the previously cited empirically necessary and sufficient conditions. On the other hand, he may have a gifted student who possesses high level motor efficiency and a complete understanding of the backhand groundstroke concept. This understanding was achieved through the student's own initiative by reading a book on tennis stroke analysis. In order to have this gifted student execute the skill, the instructor need only stipulate the condition of "practice." For this student, this one condition is empirically sufficient for executing the skill. For other students, the empirically sufficient condition may involve something else such as modeling.

Although this first instructional stage emphasizes descriptive explanations as the vehicle for bringing about the understanding of a skill concept as well as bringing about the translation of that skill concept into the actual physical performance of the skill, it is important to remember that a student can conceivably acquire a particular skill such as a backhand groundstroke without really understanding the concept of the skill. This situation may arise if the teacher, for example, lacks the teaching expertise and experience to explain a concept through either logically necessary/sufficient conditions or empirically necessary/sufficient conditions. Perhaps he is a skillful tennis player who has had no prior teaching experience. In this case the instructor may still be able to transmit the skill to his students through techniques such as modeling. Even

if the instructor is, at times, successful in imparting skills through these alternative techniques, he is still handicapped as a teacher by his inability to utilize one of the most important tools of teachers, explanations. This is not to say that surrogate explanations such as modeling have no place in the instructional sequence. As a matter of fact, the instructor during the instructional stage of "Ignorance to Enlightenment" should employ some modeling techniques as a correlative to help the student first assimilate and then to firmly grasp the concept.

The second stage of instruction, "Enlightenment toward Practical Application," is characterized by a more democratic teaching atmosphere. During this second instructional phase, the prescriptive-descriptive explanatory directives are noticeably absent. They are replaced by reason-giving explanations coupled with an intensified utilization of analogies and modeling techniques. It should be noted that reason-giving explanations can be used effectively with both private and group lessons and should not be more in evidence with one type of lesson situation than another as has traditionally been the case. Reason-giving explanations are utilized at this point to psychologically reassure those students who have not successfully been able to master tennis skills by dint of the descriptive explanatory paradigms and modeling procedures used in the "Ignorance to Enlightenment" phase of instruction. Some students have been able to make significant progress in skill

acquisition through the procedures employed during stage one of instruction, while others have not. Those who have not are at a crisis point regarding the acquisition of tennis skills. Perhaps student expectations have been unrealistic in terms of how much could be achieved by individuals with their particular physical attributes or limitations. In this case an instructor can allay the fears and frustrations of these students through a "justification" type of reason-giving explanation as shown by the following hypothetical dialogue:

Student: Is there any hope for me to continue in tennis?

Teacher: Personally, I believe that the secret of improving your game lies in learning to believe that you can do it--in establishing the boundaries of success you can reasonably expect to attain and working toward that realistic goal. Thus, the objective is not to be a "success" because that will produce endless frustration. Achievement must lie in proving yourself "successful" within your own limitations and learning to enjoy a sense of accomplishment with just that. 17

Once students have overcome their psychological dilemma, they are ready, once more, to resume the learning process. The instructor will not often attempt to redescribe the tennis skill to be learned through an explanatory paradigm of the type employed during the initial phase of instruction. He will, instead, utilize "surrogate" explanations such as analogies or modeling, including the employment of modern

¹⁷Mark Cox, "Condition Your Mind, Not Just Your Body to Win," Tennis 12 (July 1976): 48.

technological equipment such as videotape. Paradoxically, this secondary choice will be a "better" technique than the first, because it accomplishes its objective.

The third stage of instruction, "Efficiency-Inefficiency-Efficiency" is applicable to a tennis player who has advanced beyond the rudimentary skill level. This individual knows how to execute the basic stroke techniques and has a working knowledge of the proper match play strategy to employ during competitive encounters. However, even though he is not considered technically a beginner, this adept player may have to undergo a learning/relearning process through a particular instructional sequence in order to bring his skills up to the optimum level of efficiency. For example, he may be a relatively skillful player who possesses unorthodox tennis strokes. His somewhat idiosyncrastic stroke techniques have enabled him to achieve considerable success in tournament play at the lower levels of local match play. The players he has encountered are unable to adequately cope with his unorthodox, yet effective, playing style. Because of his success at the lower levels of competitive play, this skillful player wishes to enter higher level tennis tournaments. His tennis teacher realizes, however, that in order for this player to realize his ambition, he must modify his unorthodox techniques to withstand the determined assaults of the more skillful adversaries. Thus, in order to help this skillful player, the instructor must lead him through the third stage of instruction:

"Efficiency-Inefficiency-Efficiency." During this stage, the instructor must convince this player of the efficacy of unlearning an unorthodox playing style--a style which has brought him proven success--and learning a new, unproven technique of stroke production. In the process of modifying his playing style, his stroke techniques will become inefficient for a time. He is now in a position of possibly losing to opposition whom he had formerly dispatched with relative ease. If he follows his instructor's advice, he could conceivably suffer temporary humiliation. At this critical point in a player's development, the coach should employ "reason-giving" explanations_p to convince his pupil of the advantages of changing his current playing techniques. The instructor could point out that, in order for the player to reach his highest level of potential skill development, he must be willing to undergo a temporary loss of efficiency in order to attain his greatest overall playing efficiency. The player must be convinced that the far range goal is worth the immediate discomfiture.

The reason-giving explanations used during this third phase of instruction differ from those used during the second stage. During the second stage of instruction, "Enlightenment toward Practical Application," reason-giving explanations were employed as a psychological tool to encourage students to persist in their endeavors to acquire certain foundational skills. Such students need the psychological reinforcement, for they have never experienced

success in the area of tennis skill acquisition. However, during the third stage, "Efficiency-Inefficiency-Efficiency," reason-giving explanations are used to appeal to the "logic" of the students rather than to act as an emotional spur. The students at this stage have already achieved some measure of success in the acquisition of tennis skills and playing competence. Students are usually given two alternatives through such explanations:

1. Retain the same stroke techniques with their inherent weaknesses and remain secure as the best player in a lower competitive level.
2. Relearn the stroke techniques and suffer the attendant problems such as temporary stroke inefficiency and frustration in order to have the opportunity both to reach one's skill potential and to reach greater competitive heights. The second choice is a calculated gamble; for the student can never be sure that he will succeed either in radically improving his skills or in experiencing satisfaction at a higher competitive level.

To briefly summarize, our comprehensive explanation paradigm makes use of four explanation models: "descriptive," "reason-giving," "value," and "obligation" in a learning sequence comprised of three instructional stages which have been discussed. We have also indicated that in the teaching situation between the instructor and the student, alternative, surrogate forms of explanations such as "modeling" and "analogies" would be employed to help the students acquire tennis skills, especially if the descriptive explanation paradigms utilized heavily in stage one of instruction failed to accomplish their objective. Finally, we have indicated that more emphasis would be placed upon creating a

proper climate of learning and upon promoting the positive emotional dispositions on the part of the learner through "reason-giving" and "value/obligation" explanation models.

Meta-Instruction

As we have previously discussed, the field of professional tennis instruction appears to be bifurcating into "instruction" and "meta-instruction." Instruction refers to a teaching-learning interaction involving a tennis teacher and his pupils. During the course of this instructional arrangement, the teacher attempts through the various stages of instruction to impart tennis skills to his students. Meta-instruction, on the other hand, has to do with a teaching arrangement between a master teacher of tennis to potential teachers of tennis. In the meta-instructional situation, the master teacher is not attempting to impart basic skills to the aspiring teachers; he is, instead, attempting to show them how to teach, with greater efficiency, those students who may wish to acquire the basic skills. In other words, the meta-instructor is more concerned with tennis teaching methodology. This chapter is, in fact, an effort on our part to present a view of instruction and meta-instruction from a philosophical perspective. In this chapter, we have expressed the reasons and motives behind the introduction of our new instructional explanation paradigm. The all-inclusive explanation we have introduced, detailing the various phases of the instructional sequence, is

intended to help the tennis neophyte acquire basic skills. In addition, this new paradigm is intended to help instructors improve their efficiency in imparting tennis skills both to the neophyte and to the advanced player. Thus, our new explanation paradigm also represents our contribution to the meta-instructional field.

Tennis teachers who are interested in the meta-instructional aspect of professional tennis instruction might well follow the procedures described in this chapter. The first step for meta-instructors involves winning over other tennis teachers to their way of thinking. Master tennis teachers can accomplish this by employing "reason-giving," "value," and "obligation" explanation models. For example, the master tennis teacher might say the following: the reasons you should use my teaching techniques are such and such or my teaching methodology has value because of such and such reasons. He should then proceed, as in this chapter, to detail his more efficient teaching methodology.

Conclusion

The major purpose of this chapter has been to demonstrate that certain areas of philosophy can be applied pragmatically to many fields of endeavor, tennis instruction being but one of the many possibilities.

SUMMARY

The instructional skills involved in tennis, like the teaching skills utilized in a formal educational setting, must be cultivated and learned. Teaching involves more than a possession of subject matter competence on the part of an instructor employed by a specific educational institution. That is, it involves more than the acquisition of knowledge and possession of certain physical skills on the part of an instructor of a particular athletic technique, such as tennis instruction.

As a necessary condition for successfully transmitting his skills in tennis so that the student can apply it at a personal level, the teacher must become adept in one of the major tools available to him to transfer his skills--the different types of explanations. Interestingly enough, the instructor is usually not aware of why he pursues his particular explanatory sequence, nor is he aware of the philosophical assumptions behind the different explanation paradigms available to him. In order to make teachers aware of what they are doing and how to improve what they are doing, a new explanation paradigm was presented.

After having analyzed the major models of explanations in philosophy, we chose certain of the models and purposefully combined them with "surrogate" explanation paradigms

such as analogies and various modeling techniques. We then arranged these various types of explanations in a particular sequence geared toward a more logically cogent acquisition of skills. The result was our new comprehensive explanation paradigm for tennis instruction.

In order to impart the requisite skills to the tennis student, the instructor employed a three stage instructional sequence. The first two stages involved a learner who was still struggling to acquire the basic skills. The third stage had applicability to this same learner at a more advanced stage in his learning experience.

During the first stage, "Ignorance to Enlightenment," the instructor first employed "value" and "obligation" explanations followed by "descriptive" explanations reinforced by modeling techniques. Value and obligation explanations were used to create the proper emotional disposition within the student so that he could more readily learn the tennis skills. Descriptive explanations were used to set the conceptual framework of the skill to be learned as well as translate the skill concept into the physical execution of the skill. Modeling was used as a correlative reinforcing the descriptive explanations.

The second stage, "Enlightenment toward Practical Application" was characterized by the instructor's use of "reason-giving" explanations coupled with modeling and analogies. Reason-giving explanations were used as a

psychological tool to encourage those students who had been unable to acquire the skills through the techniques employed in stage one. At this juncture, analogies and modeling techniques were used as an alternative instrument to transmit the skill to the student.

During the third stage of instruction, "Efficiency-Inefficiency-Efficiency," the teacher used "reason-giving" explanations, but for a different purpose than for stage two. At this stage, reason-giving explanations were used to convince the advanced player to modify his skill techniques in order to make the most of his innate potential. During this stage, the player would suffer a temporary loss of playing efficiency. The player had to be convinced that the far range goal was worth the immediate discomfiture.

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The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of doctor of
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